The Iron Age

A Review of the Hardware, Iron and Metal Trades.

Published every Thursday Morning by DAVID WILLIAMS, No. 83 Reade Street, New York. Entered at the Post Office, New York, as Second-Class Matter.

Vol. XXVII: No. 14. *New York, Thursday, April 7, 1881.* *$4·50 a Year, Including Postage. Single Copies, Ten Cents.*

The Kitson Reversing Gear for Rolling Mills.

Although modern rolling mill practice points to the general introduction of compound condensing reversing engines, there are many cases where a good reversing gear for fly-wheel engines will be of very great utility. In a recent issue of the *Verh. d. Ver. z. Befördg. d. Gewerbfl.*, Prof. Peter Von Tunner, the venerable Austrian metallurgist, calls attention to the Kitson reversing gear, which, in its latest form, has been working for many months at the Monkbridge Iron Works, Leeds, England. Mr. Kitson's gear was introduced at his works quite a number of years since, and it attracted general attention, but until recently the need of frequent repairs prevented its general introduction. This drawback, Herr Tunner states, has been sufficiently removed by the latest improvements to warrant a more extended use. It may be true in some cases that a compound engine without a fly-wheel may really not consume more steam than a machine with a fly-wheel, but in most rolling mills the conditions are such as to render this doubtful. Especially for sheet mills, in which the rolls are reversed frequently and at short intervals, it does not seem likely that a reversing engine does not consume more steam than a machine with a fly-wheel and the Kitson reversing gear. Besides, it is possible with the latter to stop the rolls more promptly in case of accident. As now constructed, the Kitson gear consists of the following parts, shown in the accompanying engravings. A is the main shaft to be reversed. It is pierced from one end to the other by a hole into which water pipes are laid. The middle portion is square, as shown in section, Fig. 1, for the purpose of firmly attaching driving disk C, Figs. 1, 2 and 3. B and B^1, Fig. 2, are gear wheels which rotate in opposite directions, being connected by gearing in the ordinary way. C, Figs. 1, 2 and 3, is the driving disk, which consists of two parts. To it are attached the annular pistons D D^1, Fig. 3. The friction clutches E E^1, Figs. 2 and 3, can move freely on the shaft A. They are provided with annular cylinders, e e^1, into which the pistons D D^1 fit. The pipes H H^1 are intended for conveying the water from an accumulator to the annular cylinders. In order to operate the reversing mechanism, the water may be turned on or off by means of the valves K K^1, Fig. 3, so that the hydraulic pressure acts upon either one of the cylinders e e^1 or both are cut off from the pressure. The change may be made by turning either one of the valves, and can, therefore, be effected almost instantaneously. If the pressure acts upon the cylinder e, the friction clutch E is forced against the gear wheel B, which is thus clutched between G and E. All the wheels are then rotated by the machine, and the shaft A revolves in the same sense as the gear wheel B, because the bolts F F^1, Figs. 2 and 3, pass through the disk C. Whenever the pressure is cut off from the cylinder E by turning the valves, the wheel B is released, and if the pressure is transferred to the cylinder e^1, the wheel B^1 is clutched. The shaft A is then forced to revolve in the opposite direction. As soon as the pressure is cut off entirely from both cylinders, the clutch releases both of the wheels B and B^1, and, though they continue to revolve, the main driving shaft of the train A remains stationary. The general plan, Fig. 4, shows the arrangement of the machinery, the fly-wheel engine being at the left and the rolling train at the right, the reversing machinery occupying a position between the two.

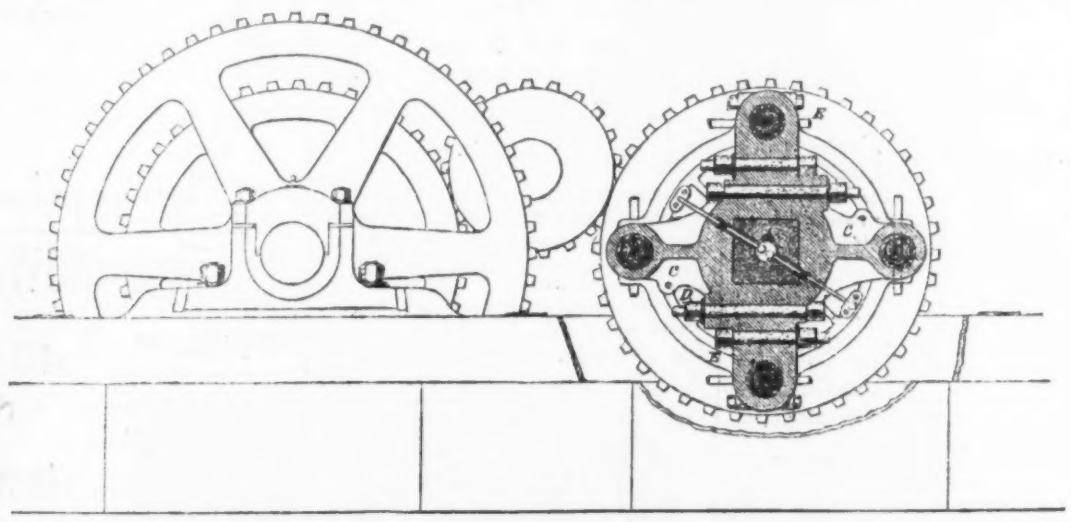


Fig. 1.—Vertical Section through C D.

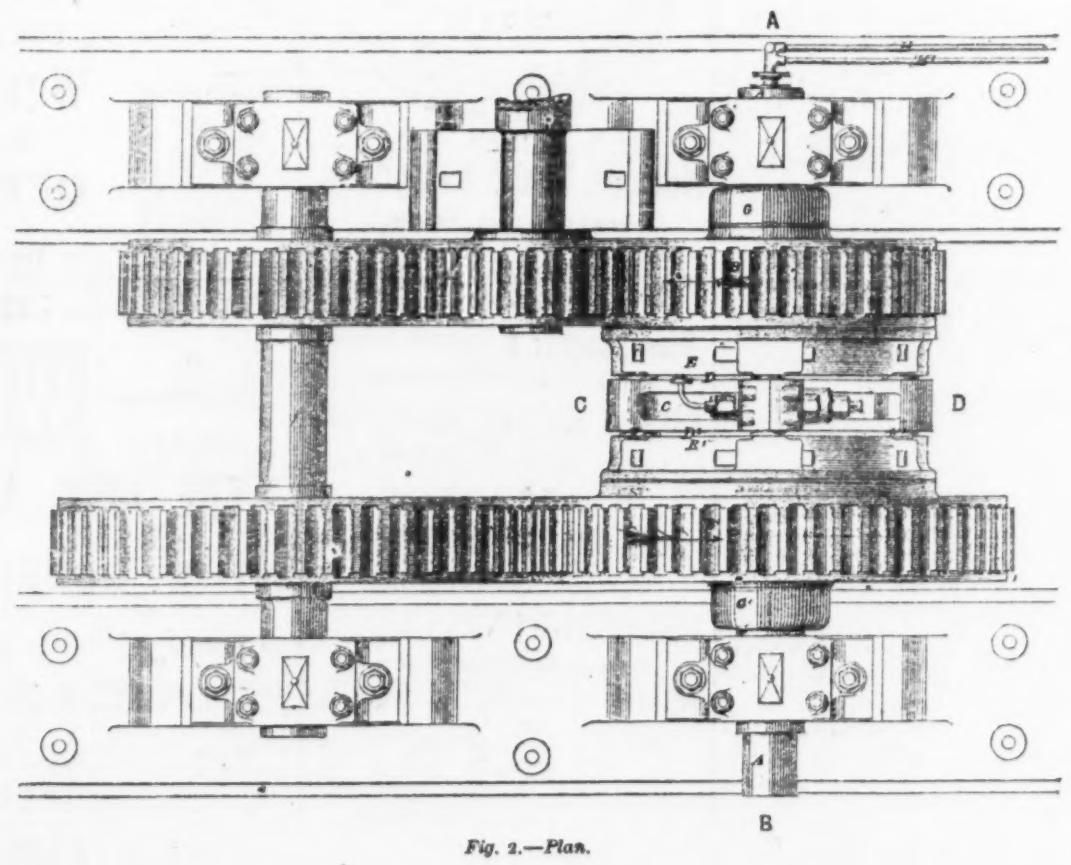


Fig. 2.—Plan.

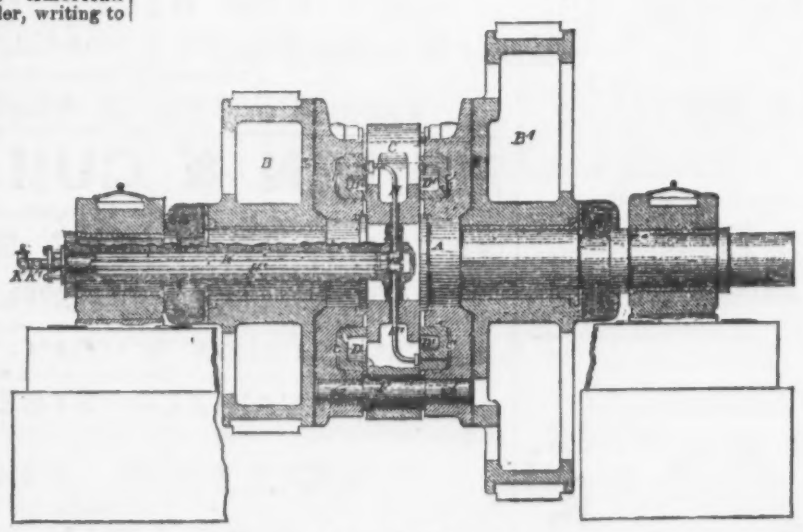


Fig. 3.—Section through A B.

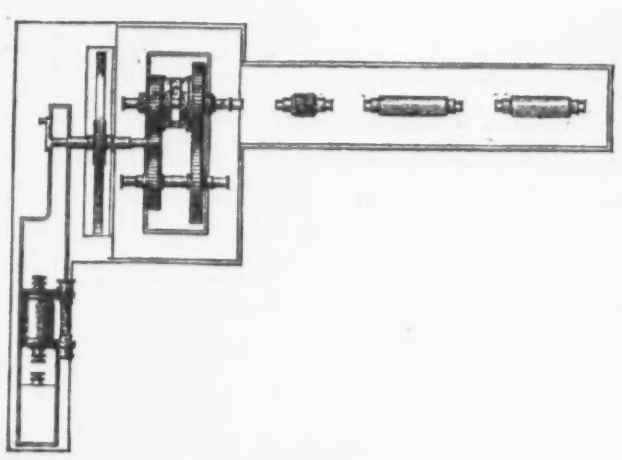


Fig. 4.—General Arrangement.

THE KITSON REVERSING GEAR FOR ROLLING MILLS.

A Plea for Improved American Machinery.—A practical miller, writing to the Glasgow *Herald*, expatiates at great length upon the causes which have brought about the ruinous competition of American millers with those of the British Islands. He contends that the English millers have neglected the most important point in the contest for the supremacy, viz., the improvement of their machinery, and that therefore the only reason why the American producer can import and undersell his English competitor is that he has the means, through his superior mechanical appliances, to produce a finer grade of flour at a cost and with an ease which puts the English miller hopelessly in the background. The writer, however, claims that much of the American flour imported into England is sold at an actual loss, and advises his co-workers to adopt the most improved American machinery now in use, and seize upon every new device as it comes from the inventor's hands.

Prof. Robert H. Thurston calls our attention to a typographical error in his paper, which was reproduced in our abstract in a recent issue. The alloy which he has found to be the strongest is composed of 55 parts of copper, 44.5 parts of zinc and 0.5 parts of tin, not 2.5 parts, as printed in *The Iron Age* of March 24.

Training Schools for Artisan Apprentices.

The *Journal* of the German Railroad Union gives an interesting account of the apprenticeship system in the Prussian Railroad shops.

For a considerable time the management of the workshop of the Berg and Mark Railroad have devoted much attention to training apprentices and fitting them to become valuable assistants in their car and locomotive repair shop. The remuneration which the apprentices receive is fixed for the first half year at 60 pfennigs (15 cents) per diem, to increase half yearly for the first two years to 1 mark, 20 pfennigs (29 cents), and during the two last years of his apprenticeship to further increase half yearly to 1.60 marks (40 cents) per diem. It is also arranged that after completing his probationary work, every apprentice, on being made journeyman, shall receive a present of some article that will be useful to him in his vocation, for instance, a technical book, a traveling outfit, &c., to encourage him to continue his studies independently and occupy his leisure hours profitably. After the lapse of the first two years of apprenticeship the apprentices are put at contract work, in order that during their four years' stay they may be taught to understand and accomplish every branch of work undertaken in a railroad workshop.

Only in a few isolated cases, in which the apprentices were in reality themselves the cause, has it been found necessary to prolong the period of practical instruction beyond this time. A large number of the higher class of skilled artisans in the repair shops of the Berg and Mark Railroad, particularly in the Witten shops, are apprentices who have been trained in the shops during the last twenty years. In this *personnel* the railroad possesses a staff of capable workmen, accustomed to careful work, and by reason of their training thoroughly acquainted with every detail in the construction of rolling stock, and who, in both capability and usefulness, as well as in general conduct, are in no respects behind their fellow workmen who have received different training.

American Steamship Line Finances.—The annual report of the managers of the American Steamship Company showed a deficiency for the year 1880 of $57,510.15. The receipts for the year amounted to $942,984.84, of which $554,952.90 came from freight, $384,351.81 from passengers and $3,680.13 from miscellaneous services. The operating expenses were $730,759.39; disbursements for shore expenses, $102,017.89, including expenses of agencies.

SCIENTIFIC AND TECHNICAL.

Prof. Marsh, of Yale College, has published a very valuable monograph on

THE EXTINCT TOOTHED BIRDS OF NORTH AMERICA.

So far as completeness of the remains is concerned, the remains are remarkably perfect, considering the fragile character of the birds' bones, there being almost perfect skeletons in some cases. The first specimens which were taken from the cretaceous deposits of Kansas were found by Prof. Marsh in 1870, and there are now in the Yale Museum more than 100 individuals of this group. The deposits in which they have been found consist of beds of a fine yellow chalk and a calcareous shale, which have been little disturbed, and to this fact the wonderful preservation of the fragile bones is due. There have been found two widely separated types of Odontornithes, as these toothed birds have been called by Prof. Marsh. They both lived during the cretaceous period in the same region, and yet differed more from each other than any two recent birds. One of these groups includes very large swimming birds without wings and with the teeth in grooves. The other contains small birds, endowed with great powers of flight and having teeth in sockets and biconcave vertebræ. Some of the aquatic birds measured almost 6 feet from the tip of the bill to the end of the toes. There were 14 functional teeth in the maxillary bone, while in each ramus of the lower jaw there were 33. These teeth were implanted in a continuous groove, and were no doubt held in place during life by cartilage. The method of replacement of the teeth was similar to that in some reptiles. The young tooth was formed on the inner side of the one which it was to replace. As it increased in size, the facing of the old tooth became more and more eaten away, and was finally expelled by the new one. The bill was long and slender, the neck long and flexible, and there were no functional wings. The legs were powerfully developed, but were adapted solely for progression through the water, a character which those of neither recent nor fossil birds possessed. The tail was wide, long and broad, and must have been of great service in steering and diving. The second class of toothed birds were small, of the size of a pigeon, with very large, strong wings, but small legs and teeth. The teeth were implanted in distinct sockets and were strongly recurved. The method of replacement of the teeth was not lateral, as in those of the first-class, but vertical, as in the crocodile. That they were provided with feathers is proved beyond question by the tubercles for the attachment of quills on the forearm. The discovery of these two ancient types of birds, so widely different from each other and from all known members of the class, gives many hints as to the genetic origin of birds, and proves especially interesting as confirming the generally accepted view of the close relationship between birds and reptiles.

Before a recent meeting of the Engineers' Club of Philadelphia, Prof. M. L. Haupt read a paper describing

A SYSTEM OF DEFLECTING ARMOR FOR SEA-COAST DEFENSE,

designed by Mr. N. B. Clark, Past Assistant Engineer, United States Navy. The inventor's improvements are based upon the fact that it is much simpler to resist the effect of a projectile by deflecting it than by opposing it by thick masses of inert matter, as is evinced by the "ricocheting" of a shot upon the water. He protects all the vital parts of the vessel by an iron shield, convex upward, placed below the water line, and so curved that a shot cannot strike point blank. The guns are mounted upon the back of this shield, but incased in double convex disks, which are practically invulnerable. They are worked by very ingenious, but simple, devices in the hold, and loaded, swabbed and run into position for firing by hydraulic pressure. It is claimed that by this means a great economy is effected in the weight of metal required for attack and defense; the vessel is more readily handled, more seaworthy and is invulnerable. The principle may be applied equally well to the construction of batteries for defense on shore.

It has been proved by Herren Strouhal and Barus, from experiments in which steel wire was treated so as to show all degrees of hardness between the glass-hard and annealed states, that the thermo-electric and galvanic properties of steel vary with the degree of hardness in a very sensitive manner. Their researches, which were published in Wiedermann's *Annalen*, throw some useful light on the nature of the annealing process, and on the magnetic behavior of steel in relation to its hardness and other properties, a subject which fully deserves the closest investigation.

Metals.

ANSONIA
BRASS & COPPER CO.,
No. 19 Cliff Street,
Phelps Building, NEW YORK.
MANUFACTURERS OF
BRASS AND COPPER
IN
Sheets. Bolts, Rods, Wire, &c.
Seamless Brass & Copper Tubing.
Ansonia Corrugated Stove Platforms.
PURE COPPER WIRE
For Electrical Purposes, Bare and Covered.
Phosphor Bronze Rods for Pumps, &c.
ANSONIA ★ REFINED INGOT COPPER.

PHELPS, DODGE & CO.
IMPORTERS OF
TIN PLATE,
ROOFING PLATE,
Sheet Iron, Copper, Pig Tin, Wire, Zinc, &c.
MANUFACTURERS OF
COPPER AND BRASS.
CLIFF STREET, NEW YORK.

SCOVILL MFG CO
BRASS,
HINGES, WIRE, GERMAN SILVER.
PHOTOGRAPHIC GOODS.
BUTTONS,
CLOTH AND METAL.
DEPOTS, 419 & 421 Broome St., N. Y. 177 Devonshire St., Boston. 183 Lake St., Chicago.
FACTORIES, Waterbury, Conn. New Haven, Conn. New York City.

DICKERSON, VAN DUSEN & CO.,
Importers of
Ti Plate, Pig Tin, Sheet Iron, Cooper, Wire, Zinc, Etc.
29 & 31 Cliff St., cor. Fulton,
DICKERSON & CO., Liverpool. NEW YORK.

ROME IRON WORKS,
Manufacturers of
Brass, Gilding Metal, Copper and German Silver
(In Sheets, Rods, Tubing or Wire),
COPPER & BRASS RIVETS AND BURS.
Rome, New York.

Metals.

Waterbury Brass Co.
CAPITAL, - - $400,000.
Sheet, Roll and Platers' Brass,
GERMAN SILVER,
Copper, Brass and German Silver Wire,
BRASS AND COPPER TUBING,
COPPER RIVETS & BURS,
BRASS KETTLES,
Door Rail, Brass Tags,
PERCUSSION CAPS,
POWDER FLASKS,
Metallic Eyelets, Shot Pouches, Tape Measures, &c.
And small Brass Wares of every Description.
Cartridge Metal in Sheets or Shells a Specialty.
Sole Agents for the
Capewell Mfg. Co.'s Line of Sporting Goods and Wood's Paper Shot Shells.
DEPOTS: 296 Broadway, New York, 189 Eddy St., Providence, R. I.
Mills At WATERBURY, Conn.

Manhattan Brass Co.,
Manufacturers of
Sheet Brass, Brass Wire, Copper Wire, Copper Rivets, Brass Tubing, Zinc Tubing,
Olmsted Patent Oilers, Prior Patent Oilers, Broughton Patent Oilers, Brass, Tin & Zinc Oilers, Brass Butt Hinges, Hurricane Lanterns, Brown's Patent Picture Hooks.
Fire Sets, Fenders, &c.
BRASS BLANKS AND TUBES
OF EVERY DESCRIPTION TO ORDER.
OFFICE AND WORKS,
1st Ave., 27th to 28th Sts., New York.

THE NEW HAVEN COPPER CO.,
255 Pearl Street, New York.
Manufacturers of and Dealers in
Braziers' & Sheathing COPPER.
Kettle Bottoms, Bolts, Circles, Rivets, Ingot Copper, Spelter, Solder, &c.

JOHN STARR,
Hardware & Metal Broker,
AND
MANUFACTURERS' AGENT,
Halifax, Nova Scotia,
Representing in the Dominion of Canada several American Manufacturers, is ready to accept further Agencies. Satisfactory references.

Metals.

The Plume & Atwood Mfg. Company,
MANUFACTURERS OF
SHEET and ROLL BRASS and WIRE,
German Silver and Gilding Metal
Copper Rivets and Burs,
Kerosene Burners,
Lamp Trimmings, &c.
80 Chambers Street, New York.
13 Federal Street, Boston.
109 Lake Street, Chicago.
Rolling Mill, THOMASTON, Ct. Factories, WATERBURY, Ct.

Bridgeport Brass Co.,
MANUFACTURERS OF
Sheet and Roll Brass,
Brass & Copper Wire & Tubing,
German Silver Metal and Wire,
Copper and Iron Rivets.
OILERS and CUSPADORES, LANTERNS and TRIMMINGS, Clocks & Fly Fan Movements
LAMPS and TRIMMINGS, KEROSENE BURNERS, PLUMBERS' MATERIALS.
Particular attention paid to cutting out Blanks and manufacturing Metal Goods.
MANUFACTORY, *Bridgeport, Conn.* WAREHOUSE, *19 Murray St., N. Y.*
THOS. W. FITCH, Prest and Treas. A. A. LASAR, Secy.

STANDARD WIRE
HARRISON
WIRE
COMPANY.
TRADE MARK
ST. LOUIS, MO.

Holmes, Booth & Haydens,
WATERBURY, CONN.
NEW YORK, 49 Chambers St. BOSTON, 18 Federal St.
Manufacturers of all kinds of
Brass, Copper & German Silver,
ROLLED AND IN SHEETS.
BRASS & COPPER WIRE,
Tubing, Copper Rivets & Burs.
BRASS & IRON
JACK CHAIN, DOOR RAIL.
German Silver Spoons.
SILVER PLATED FORKS & SPOONS,
Kerosene Burners, &c.

JOHN DAVOL & SONS,
Agents for
Brooklyn Brass and Copper Co.,
Dealers in
Ingot Copper, Spelter, Lead, Tin, Antimony, Solder & Old Metals.
100 John Street, N. Y.

PASSAIC ZINC CO.
Manufacturers of
Pure Spelter
FOR
Cartridge Brass, Gas Fixtures, Bronzes
AND ALL FINE WORK.
Also for
Galvanizers & Brass Founders.
MANNING & SQUIER, Gen'l Agents,
113 Liberty Street, N. Y.

Geo. W. Prentiss & Co.,
HOLYOKE, MASS.,
MANUFACTURERS OF
IRON WIRE.

Bright, Coppered, Annealed and Tin Plated. Also GUN SCREW WIRE
Of all sizes straightened and cut to order.

The Schoenberg Metal Mfg. Co.,
Manufacturers of and Dealers in
SOLDER, TYPE,
Stereotype, Electrotype and Babbitt Metals.
Importers of Block Tin, Antimony, &c. Refiners of Lead, Spelter, &c. Highest price paid for Old Metals and all kinds of Dross. 528 and 530 East 20th Street, between Avenues A & B, New York.

Wire, etc.

PHILIP L. MOEN, President & Treasurer. CHARLES F. WASHBURN, Vice President & Secretary.
Washburn & Moen Mfg. Co.
Established, 1831. Capital, $1,500,000
WORCESTER, MASS.
WIRE DRAWERS.
Patent Galvanizing, Rolling and Tempering.
MANUFACTURERS OF
IRON, AND IRON AND STEEL WIRE.
Of Every Description.
A SPECIALTY MADE OF
GALVANIZED TELEGRAPH WIRE,
GALVANIZED TELEPHONE WIRE,
PATENT STEEL WIRE BALE TIES,
PATENT STEEL BARB FENCING,
AND PUMP CHAIN.
NEW YORK OFFICE: 27 Cliff St. ST. LOUIS WAREHOUSE: 802 No. Second St. CHICAGO WAREHOUSE: 197 Lake St.

Crimped Wire Stall Partition.

No. 54. Double or Half Circle Wrought Iron Hay Rack.

No. 55. Corner Hay-Rack, Right Hand.

HOWARD & MORSE,
Warehouse:
45 Fulton Street,
NEW YORK,
Manufacturers of
Iron, Brass & Copper
WIRE CLOTH,
Plain and Ornamental Wire Work,
Wire Fence & Railing,
DOOR AND WINDOW GUARDS,
OFFICE RAILING,
ALSO,
Iron Stable Fixtures.

Church Guard. Round Iron Frames.

Window Guard. No.

Window Guard. No. 9.

WORKS AT TRENTON, N. J.
ROEBLING'S WIRE ROPE
New York Office AND Warehouse 117 Liberty Street.
THE JOHN A. ROEBLING'S SONS CO.,
MANUFACTURERS OF
WIRE ROPE
OF
Iron, Steel and Copper
FOR
Hoisting Purposes of all kinds, for Ferries, Stays, Ship Rigging, Sash Cords, Lightning Rods, &c., &c. Suspension Bridge Cables.
GALVANIZED
Telegraph Wire, Market Wire, Vineyard Wire.
Iron and Steel WIRE
FOR
Market Wire, Fence Wire Bridge Wire, Chain Wire, Buckle Wire, Spring Wire, Rivet Wire, &c., &c.
GALVANIZED WIRE CLOTHES LINES.

IRON AND STEEL WIRE ROPE
For Hoisting, Running & Standing Ropes, Ferries, &c.
CONSTANTLY KEPT ON HAND.
Address, HAZARD MFG. CO., Wilkesbarre, Luzerne Co., Pa.

FELTEN & GUILLEAUME,
Carlswerk, near Cologne, Germany.
PATENT CRUCIBLE STEEL WIRE,
For Mining and Plow Ropes, Hawsers and Bridge Cables.
SIEMENS-MARTIN AND BESSEMER STEEL WIRE,
Flusseisen, Swedish and German Charcoal Wire.
GALVANIZED TELEGRAPH WIRE
of Charcoal and Swedish Iron and Steel, also with high conductivity, and in long lengths.
GALVANIZED STEEL WIRE,
For Plain, Barb and Strand Fencing, 3, 4 and 7-ply Strand, Staples, &c. Annealed and Oiled Fencing Wire, round and oval.
WIRE ROPE
OF EVERY DESCRIPTION.
TELEGRAPH CABLES.
Contractors to the German and Foreign governments. The oldest house in the branch on the Continent. Telegraph Address, CARLSWERK, COLOGNE.
General Agents for U. S. and Canada,
PERKINS & CHOATE, 23 Nassau St., N. Y.

J. WOOL GRISWOLD,
Manufacturer of
WIRE.
TROY, N. Y.

MINERS' CANDLES.
Superior to any other Light for Mining Purposes. Manufactured by
JAMES BOYD'S SON,
Nos. 10 & 12 Franklin St., New York.

A. C. NORTHROP,
Waterbury, Conn.,
NOVELTIES IN BRASS AND OTHER METAL GOODS
FOR HARDWARE TRADE.
Wrought Iron and Brass Machine Screws; Turned, Hexagon, Round and Square Head Cap and Set Screws; Brass and Iron Safety and Jack Chain; Gilt, Nickel Plated and Bronze Trimmings of all kinds, from Sheet Iron, Steel or Brass.
Estimates on patented articles, or any description of Sheet Metal work, respectfully solicited and promptly given.

ABRAM S. HEWITT, President. WM. HEWITT, Vice President.
THE TRENTON IRON COMPANY,
INCORPORATED 1847,
TRENTON, N. J., Manufacturers of
IRON and STEEL WIRE
OF ALL GRADES,
BRIGHT, ANNEALED, COPPERED, TINNED AND GALVANIZED;
Iron and Steel Wire Rods;
EXTRA QUALITIES OF BAR IRON AND RODS.
Best Qualities of Gun-Screw and Charcoal Iron Wire; Crucible, Siemens-Martin and Bessemer Steel Wire.
Wire Straightened and Cut to Lengths.
New York Office, COOPER, HEWITT & CO., 17 Burling Slip.
Philadelphia Office, JOHN HEWITT, Agent, 21 North Fourth St.
JAMES HALL, Treasurer. E. HANSON, Secretary.

BRODERICK & BASCOM,
MANUFACTURERS OF
IRON WIRE ROPE.
STEEL WIRE ROPE.

728 N. Main St., St. Louis, Mo.

The English Board of Trade and Steel.

The *Engineer* contains the following article, which will be read with interest by the producers as well as the users of steel:

It has been known for some time that the Marine Department of the Board of Trade has been experimenting with steel plates, and a species of report on these experiments in the shape of a memorandum for the information of Board of Trade surveys has just been published. The report is signed by Messrs. Thomas W. Trail, Thomas J. Richards and Peter Samson. It concludes with the following suggestive words:

"Proofs are not unfrequently given that with the increasing introduction of steel in shipbuilding and boiler making, considerable variability occasionally occurs in its tensile strength and ductility. One great obstacle to the greater, or even continued, use of steel for the above purposes may, it is feared, be found in the gradual reduction of its ductility, arising from the effects of competition between steel manufacturers."

The circumstances under which the memorandum has been prepared are very curious, and throw some light on the passage which we have quoted. The world in general has been for a very long time assured that the only steel in the market fit for ships and boilers is that made on the Siemens system, and those who make Bessemer steel have either been unable or unwilling publicly to contradict the assertion. The action taken by the Board of Trade is, no doubt, a blow to the Bessemer interest, and a very considerable boon to the Siemens-Martin interest. This will be readily understood when we add that the memorandum applies not only to the Siemens-Martin steel alone, but to the steel made by one firm, the Steel Company of Scotland. It does not appear that the Board of Trade is much to blame in the matter, and yet we cannot say that it has acted quite judiciously. The Board of Trade was asked, it appears, by the Steel Company of Scotland, to sanction the use of the company's steel in the construction of ships and boilers to be passed by the board. Mr. Trail, in reply to this request, said that he must have some proof afforded him of the fitness of the material for the intended purpose. "The company very readily acquiesced in the justness of the request," says the memorandum in very queer grammar, "and forwarded for testing a set of plates, ¼ inch, ½ inch, ¾ inch and 1 inch thick. They also caused to be constructed a set of experimental boxes of different thicknesses of steel plate to represent the flat surface of steam boilers. These have been burst by hydraulic pressure, and a large amount of valuable information gained respecting the strength of such surfaces when formed of steel plates." Thus it comes to pass, and we have said that nothing appears in the report concerning the steel made by any other firm save the Steel Company of Scotland; and our readers must judge for themselves whether the concluding passage of the memorandum, which we have quoted above, is meant as a warning to the Steel Company of Scotland not to let competition injure quality, or whether it is a hint to other companies that they should follow the examples set by the Scotch firm and eschew competition and its evils.

We do not wish it to be supposed that although the experiments of the Board of Trade dealt with only one make of steel, that they are consequently of little value; on the contrary, we hasten to assert that they are of great value, but that value will be immensely increased if some of the Bessemer firms, such for example as Sir John Brown & Co., will come forward and enable the Board of Trade to carry out a similar set of experiments on steel from the converter. It is not to be denied that the steel company of Scotland not only does its work very thoroughly, but is in a position to do a great deal of it. Its works were started at Newton, near Glasgow, in 1872, and have been increased in dimensions year by year. The converting house contains 30 hearths, the greater number of which have, with their Siemens furnaces, been started, and can turn out 65,000 tons of steel every year. The rail mills can make 40,000 tons a year; and there are plate mills which can turn out 25,000 tons a year. The consumption of coal is at the rate of 2000 tons a week; and the operations of the company are being extended, so that ere long its production will equal nearly 150,000 tons of steel per annum. That the steel made by the company is admirable no one seems to doubt. None is made by running direct from the blast furnace; good hematite, steel and iron scrap and iron ore are worked together in the hearth, ferromanganese or spiegeleisen being added just before taking the charge. It takes about eight hours to work each charge, and this gives, as we have before pointed out, ample time to ascertain its quality, and in this respect the Siemens-Martin process has a great advantage over that of Bessemer. In saying this, however, we must not be understood to assert that Siemens-Martin steel is necessarily better than Bessemer steel.

The experiments carried out by Mr. Trail were far too elaborate to permit us to notice them all at once. For the present we shall content ourselves with dealing with those on tensile strains only. All the experiments seem to have been made by Mr. Kirkaldy. The plates tested were ¼ inch, ½ inch, ¾ inch and 1 inch thick; and one of the first points deserving of attention is that the elastic limit was nearly the same with the grain and across it, while the same may be said of the breaking strains. Furthermore, it appears that the thinner the plates the better they were. Thus, while the elastic limit of quarter-inch plates was 19 tons, that of a half-inch plate was but 15.8 tons, and that of an inch plate 14.9 tons. Again, the breaking strain of a quarter-inch plate being 31 tons, that of a half-inch plate was 28.9 tons, and of a 1-inch plate 28 tons. It must be understood that Mr. Trail does not use "elastic limit" to denote the strain when permanent setting begins, but the load which causes the rate of elongation to suddenly accelerate. It is certain that the facts thus set forth, although they are not new, are not generally known. It has, indeed, been asserted by many persons that the strength of steel is unaffected by the dimensions of the tested specimen; and that a steel plate 1 inch thick is just as good as a steel plate ¼ inch thick. It has, however, been pointed out long since in our columns, that what holds true of thin steel plates does not necessarily hold true of thick plates; and the Board of Trade experiments, we are glad to see, confirm this view. Why the thin plates should be better than the thick it is not very easy to see, because it is claimed by all makers for their plates that all are equally well worked. Possibly some analogy exists between thin plates and thin wires, which, as is well known, are very much stronger per unit of area than thick wire. But we have not done with this set of experiments yet. It was found that the ultimate extension of specimens 10 inches long augmented with the thickness of the plates, varying from 23.5 per cent. with the grain, and 21.2 per cent. across it, with ¼-inch plates, to 30.6 per cent. and 25.6 per cent. in the case of 1-inch plates. Thus the thick plates had more ductility and less ultimate strength than the thin. A very interesting comparison may be drawn between steel and iron boiler plates. The breaking stress of the iron plates was 21.2 tons for ½-inch, 21.40 tons for ¼-inch, and 20.86 tons for 1-inch plates, while the extensions were respectively 9, 10.1 and 9.8 per cent. If we compare these results with those obtained from steel plates, it becomes at once apparent that iron is much the more uniform of the two. Mr. Trail sums up this portion of his report in the following words: "Comparing the steel with the iron, the ultimate stress of the former is about 36 per cent. greater than the mean of the latter. The contraction of area at fracture of the steel largely exceeds that of the different irons. In the case of the steel lengthway, it is 49.1 per cent., against 20.6 per cent. for the Yorkshire iron, 13.07 per cent. for the ordinary iron boiler plate, and 5.4 per cent. for iron ship plates. As the contraction of area at fracture is a guide to the ductility of material, it will at once be understood to how large an extent the ductility of the steel plates exceeds that of the iron, especially the ordinary boiler and ship plates." Concerning the ratio of the elastic limit to the ultimate strength, it is pointed out that, while in Yorkshire boiler plates it is about 58 per cent. of the whole, in steel plates it is 55 per cent., and, consequently, that the steel is really stronger than the iron. But it must constantly be borne in mind that Mr. Trail deals with only one make of steel, and there are no doubt steels in the market which are not only relatively, but absolutely, weaker than iron. It is possible to buy ductility too dearly. All the experiments to which we have called attention were made in the ordinary way, and, it is evident, leave much that is speculative concerning the behavior of steel still lost in doubt; and we cannot help regarding the entire series of experiments as wonderfully incomplete in this respect. Experiments made to ascertain the effects produced by drilled and punched holes illustrate this statement very precisely. We shall probably return at no distant date to the consideration of these experiments, but we may now say that the tests employed throw little or no light on the points now in the dark. It is well known, of course, that punching a steel plate or bar weakens it very much, but that weakness is manifested in a peculiar way. Thus, rails with punched flanges infallibly break at the holes when in use. The mere act of shearing a plate may cause it to crack; and it would appear that the failures coincident with punching are manifested most clearly when the bars or plates are exposed to some jarring action. Mr. Trail, to test the question, ignored shocks and jars altogether, and contented himself with exposing the samples to tensile strains steadily applied. The results he obtained are suggestive and valuable so far as they go, but they do not go far enough. He found, for example, that while drilled ¼-inch plates maintained a strength of 21.9 tons for the gross area of the plate per inch, punching reduced its strength to 19.3 tons; but in the case of 1-inch plates, punching reduced their strength from 18.3 tons; drilled, to 13.45 tons. It also appeared that with the drilled plates there was a considerable increase in strength per square inch of net area of plate left between the holes, the gain, in some cases, reaching as much as 13 per cent.

Altogether, the experiments go to show that the Steel Company of Scotland produce a very admirable material when tested by the machine. We do not for a moment assert that it is not equally good in actual use, but on this point the memorandum of the Board of Trade is nearly silent, and when it returns to the points on which much ignorance exists, it does not speak in favorable terms of steel as a constructive material, while it concludes with a special note of warning. The question of the day is: How comes it to pass that steel which will pass every test in the machine, will play the most unpleasant pranks in the boiler yard or the ship? The Board of Trade have left this question very much where it was; but this is, we think, not the fault of the board. We have already pointed out that some of the makers of Bessemer steel should follow the example set them by their Scotch rivals, and we commend to their attention the following passage from the memorandum, which will aptly conclude this article: "The value to be attributed to steel plates when welded urgently requires experimental investigation. While some manufacturers assert their ability to weld steel plates, convincing proof is constantly afforded that others are unable to do so. Even in those establishments where the operation is considered to be properly performed, it is only intrusted to certain workmen, as other smiths, equally good for general work, cannot be depended upon to perform it with success. * * An experiment was recently made to ascertain the value of an apparently perfect weld in a furnace which had been subsequently annealed, and the results showed that the weld was by no means so good as could have been obtained with iron. It is highly important that further experiments should be made in connection with the subject."

Iron.

NEW YORK.

OGDEN & WALLACE,

85, 87, 89 & 91 Elm St., New York.

Iron and Steel

Of every description kept in stock.

Agents for Park Brother & Co.'s

BLACK DIAMOND STEEL.

All sizes of Cast and Machinery Steel constantly on hand.

PIERSON & CO.,

24 Broadway, New York City.

Iron & Steel.

COMMON & REFINED IRON,

Hoops, Rods, Scrolls, Bands, Ovals, Horse Shoe, Nail Rods, Steel, &c.

Orders promptly filled from stock.

ABEEL BROTHERS,

Established 1765 by ABEEL & BYVANCK,

Iron Merchants,

190 South Street and 365 Water, N. Y.

ULSTER IRON

A full assortment of all sizes constantly on hand.

Refined Iron,
Horse-Shoe Iron,
Common Iron,
Band, Hoop and Scroll Iron.
Sheet Iron,
Norway Nail Rods,
Norway Shapes,
Cast, Spring and Tire Steel, etc.

A. R. Whitney,

Manufacturer of and Dealer in

IRON,

56, 58 & 60 Hudson, 48, 50 & 52 Thomas, and 12, 14 & 16 Worth Sts., } NEW YORK.

Our specialty is in

Manufacturing Iron Used in the Construction of Fire-Proof Buildings, Bridges, &c.

Plans and estimates furnished, and contracts made for erecting Iron Structures of every description. Books containing cuts of all Iron made sent on application by mail.

Sample pieces at office. Please address **58 Hudson Street.**

BORDEN & LOVELL,

Commission Merchants

70 & 71 West St.,

Wm. Borden, L. N. Lovell, — New York.

Agents for the sale of

Fall River Iron Co.'s Nails, Bands, Hoops & Rods.

AND

Borden Mining Company's Cumberland Coals.

WILLIAM H. WALLACE & CO.,

IRON MERCHANTS

Cor. Albany & Washington Sts.,

NEW YORK CITY.

M. H. Wallace. Wm. Bispham.

B. F. JUDSON,

Importer of and Dealer in

SCOTCH AND AMERICAN

Pig Iron,

Wrought & Cast Scrap Iron,

OLD METALS.

457 & 459 Water St., 233 & 235 South St., } NEW YORK.

DANIEL F. COONEY,

Late of and Successor to Jas. H. Holdane & Co.)

88 Washington St., N. Y.

BOILER PLATES and SHEET IRON,

LAP WELDED BOILER FLUES,

Boiler Rivets, Angle & T Iron, Cut Nails & Spikes.

Agency for Pottstown Iron Co., Viaduct Iron Works, Lebanon Rolling Mills, Pine Iron Works, Laurel Iron Works, The Bergen Rolling Mills at Jersey City, Glasgow Iron Co.

P. W. GALLAUDET,

Banker and Note Broker,

Nos. 3 and 5 Wall Street,

NEW YORK.

HARDWARE, METAL, IRON RUBBER, SHOE, PAPER AND PAPER-HANGINGS, LUMBER, COAL AND RAILROAD PAPER WANTED.

ADVANCES MADE ON BUSINESS PAPER AND OTHER SECURITIES.

Powerville Rolling Mill,

Manufacturer of

HORSE SHOE IRON

JOHN LEONARD, 450 West St., N. Y.

Iron.

NEW YORK.

A. B. Warner & Son,

IRON MERCHANTS,

28 & 29 West and 52 Washington Sts.

BOILER PLATE,

Boiler Tubes, Angle, Tee & Girder Iron, Boiler and Tank Rivets.

Sole Agents for the celebrated

"Eureka," Pennocks,
"Wawasset," Lukens,

Brands of Iron. Also all descriptions of Plate, Sheet, and Gasometer Iron. Special attention to Locomotive Iron. Fire Box Iron a specialty.

ROME MERCHANT IRON MILLS,

ROME, N. Y.,

Manufacturers of the best grade of

Bar Iron, Bands and Fine Hoops.

Scrolls, Ovals, Half Ovals, Half Rounds, Hexagon and Horse Shoe Iron. Also from Charcoal Pig a superior quality of Iron branded J. G. All puddled balls reduced by hammer. Orders may be sent to the Mill or to **J. O. CARPENTER**, our **Agent**, at **59 John Street, New York.**

ALLSTON GERRY & CO.

IRON AND METAL BROKERS

NO 68 WALL ST NEW YORK

IRON AND STEEL RAILS, OLD RAILS, SCRAP AND PIG IRON.

FOX & DRUMMOND,

Brokers in

IRON,

TIN PLATES & METALS,

68 Wall St., New York.

JAMES WILLIAMSON & CO.,

SCOTCH AND AMERICAN

PIG IRON,

No. 69 Wall St., New York.

ULSTER IRON WORKS,

18 Wall St., New York.

Tuckerman, Mulligan & Co

CARMICHAEL, EMMENS & WORTH,

130, 132 & 134 Cedar St., New York.

DEALERS IN

IRON AND STEEL BOILER PLATE.

Lap-Welded Boiler Tubes, &c., &c.

Agent for Otis' celebrated Cast Steel Boiler Plates, The Coatesville Iron Co., Pottstown Iron Co., The Laurel Rolling Mills, and Union Tube Works; Wrought Iron Beams, Angles, Tees, Rivets, &c.

HUGH W. ADAMS & CO.,

IMPORTERS OF

SCOTCH AND ENGLISH IRONS,

Agents for American Charcoal and Anthracite Furnaces,

56 Pine Street, New York.

Hugh W. Adams. Daniell L. Cobb.

W. S. MIDDLETON,

Broker in Machinery & Iron

Agent for

FORSTER'S CRUSHER & PULVERIZER,

The best in market.

W. S. MIDDLETON, 52 John St., N. Y.

S. A. LISSBERGER,

IRON & METAL DEALER,

509, 511 and 519 to 529 East 19th St., New York,

have on hand, and offer for sale, the following:

Scotch and American Pig Iron, Wrought, Cast and Machinery Scrap Iron, Car Wheels, Axles and Heavy Wrought iron; also, old Copper, Composition, Brass, Lead, Pewter, Zinc, &c.

BATES & DESPARD,

117 Pearl St., New York, P. O. Box 764,

Importers of

STEEL AND IRON RAILS, SWEDISH BARS, STEEL AND PIG IRON.

SCRAP IRON an OLD RAILS c. f. and i. to America, or f. o. b. English ports.

Iron.

NEW YORK.

John W. Quincy,

98 William Street, New York.

Anthracite & Charcoal Pig Irons,

Wrought Scrap, Cut Nails, Copper,

BLOCK TIN, LEAD, SPELTER, ANTIMONY, NICKEL, &c

HARRISON & GILLOON

IRON AND METAL DEALERS,

558, 560, 562 WATER ST., and 802, 804, 806 CHERRY ST., NEW YORK,

have on hand, and offer for sale, the following:

Scotch and American Pig Iron, Wrought, Cast and Machinery Scrap Iron, Car-Wheels, Axles and Heavy Wrought Iron; also old Copper, Composition, Brass, Lead, Pewter, Zinc, &c.

OXFORD IRON CO.,

(B. G. CLARKE, Receiver,)

Cut Nails

AND

SPIKES.

J. S. SCRANTON, Sales Agent,

81, 83 and 85 Washington Street, NEW YORK.

BURDEN'S

HORSE SHOES.

"Burden Best" Iron

Boiler Rivets.

Burden Iron Works, H. Burden & Sons,

Troy, N. Y.

EGLESTON BROS. & CO.,

166 South Street, 267 Front Street, } NEW YORK CITY.

BURDEN'S

H. B. & S.

AND

ULSTER BAR IRON.

All sizes and shapes in stock.

Also Best Grades of

Am. & Eng. Ref'd Iron, Common Iron, &c

Dan'l W. Richards. Morton B. Smith.

DAN'L W. RICHARDS & CO.,

Pig Iron and Bar Iron,

Scrap Iron, Scrap Steel,

Old Rails and Old Metals,

88 to 96 Mangin St., New York.

Glengarnock and Carnbroe SCOTCH PIG IRON.

For spot delivery and for prompt or forward shipments to New York, Boston, Philadelphia, Baltimore or New Orleans.

For sale in lots to suit by

JAMES LEE & CO.,

Sole Agents for the United States,

72 Pine Street, New York.

PASSAIC ROLLING MILL CO.,

Manufacture and have always in stock

ROLLED IRON BEAMS,

Channels, Angles, Tees, Merchant Bars, Riveted Work, Forgings, Eye Bars, &c.

PATERSON, N. J.

Room 45, Astor House, New York.

CUT NAILS

Hot Pressed Nuts, Bolts, Washers, &c.

FULLER BROTHERS & CO.,

139 Greenwich Street, New York.

Iron.

PITTSBURGH.

W. D. WOOD & CO.'S

PATENT

Planished Sheet Iron.

Patented March 14th, 1865; April 8th, 1873; Sept. 9th, 1873; Oct. 6th, 1874; Jan. 11, 1876.

Guaranteed fully equal in all respects to the

IMPORTED RUSSIA IRON,

and at a much less price.

FOR SALE,

by all the principal

METAL DEALERS

In the Large cities throughout

THE UNITED STATES.

And at their Office,

111 Water Street, PITTSBURGH, PA.

C. KANE,

OLD RAILS, SCRAP IRON, STEEL,

PIG IRON, BLOOMS, AND ORE.

PITTSBURGH, PA.

Wm. Rea, Prest. Saml. Bailey, Jr., Secy.
F. B. Laughlin, Vice-Prest. W. A. Shaw, Treas.

UNION STORAGE CO.

RECEIVE ON

Storage and Issue Warrants

ON

PIG IRON, BLOOMS, INGOTS, MUCK BAR, RAILS, &c.

Correspondence relative to establishment of yards at furnaces solicited.

General Office, PITTSBURGH, PA.

Iron.

PITTSBURGH.

STEEL TOE CALKS.

Extra Quality Homogeneous Steel

BOILER PLATE

STEEL PLATES, all descriptions.

Cut Nails and Spikes, Plate and Sheet Iron, all descriptions.

SHOENBERGER & CO., Pittsburgh, Pa.

KEYSTONE ROLLING MILL.

WILLIAMS, LONG & McDOWELL,

Manufacturers of

IRON,

Pittsburgh, - - - Pa.

Portsmouth Iron and Steel Co.,

Successors to

GAYLORD ROLLING MILL CO.,

Manufacturers of

Siemens-Martin (Open Hearth)

STEEL BOILER PLATE,

Agricultural and Machinery Steel and Steel Tire.

Also, Homogeneous Iron Boiler Plate and Rivets, Merchant Bar, Hoop and Sheet Iron, Wrought Spikes, Fish Bars and Bolts.

Office and Works:

PORTSMOUTH, OHIO.

J. C. LEWIS, Pres't and Gen'l Sup't. GEO. S. LEWIS, Sec'y and Treas.

Sable Iron and Nail Works.

ZUG & CO.,

Manufacturers of the Celebrated

Sable Nails

Office and Works,

PITTSBURGH, PA.

LEECHBURG IRON WORKS.

KIRKPATRICK & CO.,

Manufacturers of all grades of

FINE SHEET IRONS,

(Refined, Cold Rolled, Show Card, Stamping, Tea Tray, Polished, Shovel, Ferrule Iron, &c.)

NATURAL GAS USED AS FUEL.

OFFICE, No. 143 First Ave., Pittsburgh, Pa. *WORKS, Leechburg, Pa.*

SWEDISH IRON.

J. F. FULLARTON,

Bennett Building, *NEW YORK,*

Representing

L. G. BRATT & CO. and the UDDEHOLM CO., Sweden.

Pig, Bars, Rods, Swedish Bessemer and Martin-Siemens Iron; also, Steel and Iron Rails, Blooms Old Rails, Scrap Iron and Steel, &c.

Agency of

N. M. HÖGLUND'S SONS & CO., Stockholm.

Swedish & Norway Iron

of every description. Stock on hand at Boston, New York and Philadelphia. Importation orders a specialty.

GUSTAF LUNDBERG, 38 Kilby st., Boston.

ALBERT POTTS, Philadelphia Agent, 234 & 236 N. Front Street.

COMBINATION STEEL & IRON CO.,

CHESTER, PA.

We are now prepared to manufacture the COMBINATION RAILS under Wheeler's patent.

Orders solicited.

New York Office, 82 JOHN ST.

C. A. WEED, General Manager.

Geo. A. Boynton

BROKER IN IRON

70 WALL ST, N.Y.

THE IRON LINE,

FOR THE TRANSPORTATION OF

IRON, IRON ORE, COAL, &c.,

Between

Lake Champlain, New York, Philadelphia, Pa., Wilmington, Del.

For Freight apply to F. W. STARK, 33 Counties Slip, N. Y., JOSEPH PHILBRICK, 407 West Girard Avenue, Philadelphia, Pa.

The Eggertz Color Test.

Mr. William Galbraith, writing to *Iron*, gives his experience with the Eggertz color test in the following letter:

This well-known method of determining carbon in steel, being very rapid, simple, and not requiring much chemical skill, is in use now in nearly all steel works, whether employing a chemist or not, and is generally supposed to give fairly accurate results. I need not say that if it does not give such results, it is a serious matter to steel manufacturers and others, and it is because I believe that too much confidence is placed in it that I beg a little space in your journal for its consideration. Of course, the ease and rapidity with which it can be carried out created a demand, if I may use the expression, for carbon determinations. A manufacturer might wish to know the amount of carbon in a certain steel, but if it would cost two or three guineas he might ask himself if he could not do without it. The color test has undoubtedly supplied a great want, and has been of much value to steel manufacturers, and has assisted very materially the progress which has been made in the manufacture of steel. I have for some years accepted it only as a "comparative test," and have thus escaped many conflicting results; and for steel the history of which I did not know, have been careful to avoid it, or to say that the carbon had been determined by the color test. Having occasion, however, lately to inquire into this matter, I have found this conclusion more than verified, and the error much greater than I anticipated. I ought to say that the fact of the color test not giving quite concordant results has been pointed out before. Mr. Spear Parker draws attention to it in the *Chemical News* of August 20, 1880. The differences he finds, however, are by no means as great as might be easily found in actual practice, and he thinks the difficulty can be got over—partly, at all events—by means of a correction. I think if I were to assume a manufacturer asking for the carbon in a piece of steel direct from the cementation furnaces—what is known as blister steel—would expect that the result he got would be the actual amount of carbon present, or at least something approaching it. Such a thing is of daily occurrence in Sheffield. The figure returned to him, however, would probably be twice the amount of carbon present. These are the figures got under such circumstances, and they have been thoroughly verified.

BLISTER STEEL.

Actual percentage of carbon	0.87
Carbon by color test	1.60

This same piece of blister steel was hardened—*i. e.*, made red hot and plunged into cold water—the carbon again determined, both with the color test and by burning the carbon in oxygen, as before.

Actual carbon	0.86
Carbon by color test	0.65

After hardening, it is exceedingly difficult to get twice the same result by the color test. At the surface, where it was so hard that it could be crushed in a steel mortar, the above figure was got, but it is only necessary to go through a little way to get 1 per cent., 1.2 per cent., &c., always increasing toward the center.

Again, if a piece of steel is annealed, the color test gives a higher result, thus:

Annealed (by color) as received	No. 1. Per cent. 1.10	No. 2. Per cent. 1.25
When hardened	0.4 to 0.60	increasing inward.
Actual carbon	0.64	0.72

The following are some of Mr. Parker's figures:

By color test.

Unhardened	1.00	Actual carbon 0.86
Hardened	0.81	

From the method of hardening, however, which he adopted in order to avoid the difficulty of drilling the hardened piece, it could not be hardened to any great extent, and, taking this fact into consideration, his figures and mine quite agree with each other.

Hardening and annealing, however, are not the only things which interfere with the coloration process. Hammering, rolling, &c., also interfere, and the object of my experiments was to ascertain the actual effect of such treatment, as suggested in Mr. Parker's paper just referred to; and although I do not think it impossible to make a correction for such cases, yet as it is not often that the chemist knows the exact history of the steel, the result must at all times be given with a certain amount of reservation, and those who get the result ought to know that it is thus estimated. Besides, hardening, annealing, hammering, &c., is not always the same, or has anything like the same effect, as some of the above results show. Moreover, some chemists use a standard steel which has been hammered or rolled, while others use the unworked steel, the result being that their results do not agree with each other. If the piece to be tested has been hammered, he who uses the hammered steel standard will get accurate results, while he who uses the unworked steel standard will be entirely wrong, and *vice versa*. I have had an instance of this lately, in which the difference between the two results was equal to 35 per cent. on the lower figure.

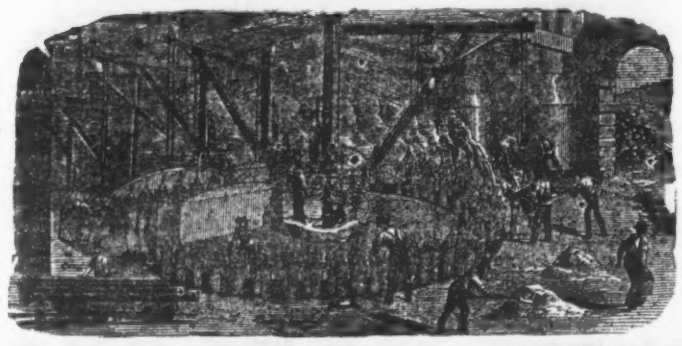
I think the evidence quite strong enough to show that this color test ought to be used as a comparative test only in steel works where it is possible to carry it out as such, and ought clearly to be abandoned as a means of determining the amount of carbon in steel, for which it is at present too much used.

Mexico and the United States.—Hon. Thos. H. Nelson, Minister Plenipotentiary to Chili under President Lincoln, and Minister to Mexico during the administration of Gen. Grant, takes a very hopeful view of the future of the Mexican Republic. When acting as a diplomatic representative at the capital, he found that neither life nor property was safe; that there was a universal hostility to everything American, and that all overtures for trade for the establishment of commercial relations were looked upon as a movement toward annexation. But Mexican sentiment has since changed to an immeasurable extent. Mr. Nelson says: "It was one of my greatest labors to teach the Mexican people that the United

A. H. McNEAL,

BURLINGTON, N. J.

Flange Pipes.



General Foundry Work.

CAST IRON PIPES

FOR WATER AND GAS.

ESTABLISHED IN 1845.

SINGER, NIMICK & CO.,

PITTSBURGH, PA.

MANUFACTURERS OF ALL KINDS OF

HAMMERED AND ROLLED

STEEL,

Warranted Equal to any Produced.

BEST REFINED TOOL CAST STEEL

For Edge and Turning Tools, Taps, Dies, Drills, Punches, Shear-Knives, Cold-Chisels and Machinists' Tools generally.

SAW PLATES

For Circular, Mulay, Mill, Gang, Drag, Pit and Cross-Cut Saws.

Sheet Steel

For Springs, Billet Web and Hand Saws, Shovels, Cotton Gin Saws, Stamping Cold, &c., &c.

SIEMENS-MARTIN (Open-Hearth) PLATE STEEL

For Boilers, Fire-Boxes, Smoke Stacks, Tanks, &c.

☞ All our Plate and Sheet Steel being rolled by a Patented Improvement is unequaled for surface finish and exactness of gauge.

ROUND MACHINERY CAST STEEL

For Shafting, Spindles, Rollers, &c., &c.

File, Fork, Hoe, Rake, R. R. Frog, Toe-Calk, Sleigh-Shoe and Tire Steel, &c.; Cast and German Spring and Plow Steel.

"Iron Center" Cast Plow Steel.
"Soft Steel Center" Cast Plow Steel,
"Solid Soft Center" Cast Plow Steel.

Finished Rolling Plow Coulters with Patent Screw Hubs attached.
Agricultural Steel cut to any pattern desired.
Steel Forgings made to order.

Represented at *59 Beekman St., New York,* and *417 Commerce St., Philadelphia,* by

HOGAN & BURROWS, Gen'l Agents for Eastern and New England States.

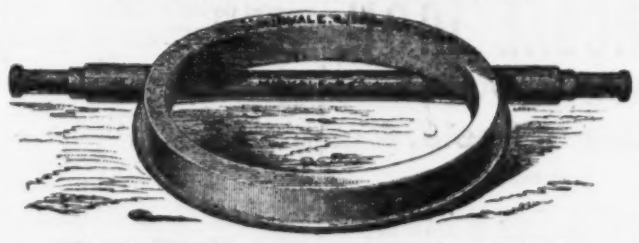
THE MIDVALE STEEL COMPANY,

CRUCIBLE AND OPEN-HEARTH STEEL.

TIRES and AXLES

OF EVERY DESCRIPTION.

A. G. TOMPKINS & CO.....Boston
H. A. ROGERS.....New York
W. H. WALLACE & CO., New York
CREHAR, ADAMS & CO., Chicago



POST & CO .....Cincinnati
JACOB LOSEY.....Louisville
M. M. BUCK & CO.....St. Louis
SMITH & RADY.....Richmond

Tool, Machinery and Spring Steel Castings and Forgings.

Works and Office, Nicetown, Philadelphia, Pa.

Warehouse, 12 N. 5th St., Philadelphia, Pa.

Philadelphia Steel Forge.

STEEL FORGINGS of all descriptions { Axles, Frog-points and plates, Switch-plates, Wrist-pins, Connecting-rods, Guide-bars, Piston-rods and all sorts of Railroad Forgings.

BEST QUALITY OF CAST TOOL STEEL { for Edge and Turning Tools, Taps, Dies, Drills, Punches, Shear-blades, Cold-Chisels, and Tools generally.

CAST MACHINERY STEEL { for Shafting, Spindles, Piston-rods, &c.

GENERAL MACHINERY AND MARINE FORGINGS.

WORKS, Frankford Creek, Philadelphia (formerly Baldwin's Steel Works). Address all orders to

PHILADELPHIA STEEL FORGE, 315 Willings Alley, Philadelphia, Pa.

Send for prices for any work in this line.

ESTABLISHED 1847.

A. WHITNEY & SONS,

PHILADELPHIA,

CHILLED RAILROAD WHEELS

For every kind of service, including *Street, Mine and Lumber Tramways.* Wheels furnished in rough bored or on axles. Chilled castings made to order.

PENNSYLVANIA STEEL COMPANY,

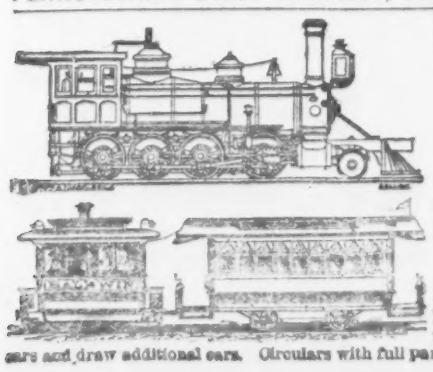
Steel Rails, Frogs, Crossings & Switches.

Forgings for Piston Rods, Guide Bars, Wrist Pins and Machinery Purposes.

Works at Baldwin Station, Pennsylvania Railroad, near Harrisburg, Pa.

Address all orders to

PENNSYLVANIA STEEL COMPANY, 208 South Fourth Street, Philadelphia.



BALDWIN LOCOMOTIVE WORKS,

BURNHAM, PARRY, WILLIAMS & CO., Proprietors,

Philadelphia, Pa., U. S. A.,

Manufacturers of

LOCOMOTIVE ENGINES

of every Description.

Catalogues, photographs and estimates furnished on application of customers.

NOISELESS STEAM MOTORS,

For city and suburban Railways.

These machines are nearly noiseless in operation; show no smoke with the use of anthracite coal or coke as fuel, and show no steam whatever under ordinary conditions of service. They can be run at two or three times the speed of horse cars and draw additional cars. Circulars with full particulars supplied.

ROANE IRON COMPANY,

Manufacturers of and Dealers in

Pig and Railroad Iron.

CHATTANOOGA, - - - - TENN.

JOHN JENKINS, Gen'l Manager. JOHN SCHWER, Jr., Sec'y and Treas.

JENKINS, SCHREYER & CO., Limited,

MANUFACTURERS OF

Refined Merchant Bar Iron.

Forge and Rolling Mills, WILLIAMSPORT, PA.

Sunken Charcoal Blooms and Rods.

Puddled Charcoal Blooms and Rods.

BRITTON IRON AND STEEL CO.,

MANUFACTURERS OF

BOILER, TANK AND BRIDGE PLATES,

Galvanized and Black Sheet Iron.

Foot of Wasson Street, CLEVELAND OHIO.

JACKSON IRON COMPANY,

Manufacturers of
Fayette Pig Iron (L. S. Charcoal),
Stewart Pig Iron (Bituminous Coal and Coke),
} Especially adapted for Bessemer, Siemens-Martin Malleable and Car Wheel purposes.

Also, Hammered Blooms, Billets and Muck Bar, extra low in phosphorus, for Siemens-Martin and Crucible Steel. Miners of Jackson (Lake Superior) Iron Ores.

FAYETTE BROWN, Gen. Agent. HARVEY H. BROWN, Asst. Gen. Agent. Offices, 130 Water St.

HARVEY H. BROWN & CO.,

AGENTS

CHAMPION IRON CO.,
LAKE SUPERIOR IRON CO.
} Lake Superior Iron Ores.

Dealers in Pig Iron, Iron Ores and Old Rails.

Offices, 130 Water Street, - - CLEVELAND, OHIO.

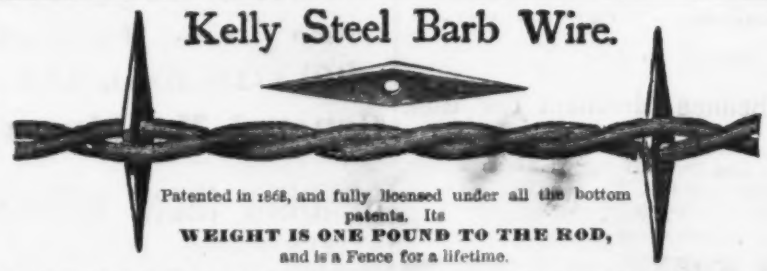
CHROME STEEL

For Sale by JOHN W. QUINCY, 98 William St., N. Y.

Eighty cases of this Best Quality Cast Steel, to close a consignment, in quantities as required, at less than market rates, in Octagon, ⅜, ⅝, ¾, ⅞, 1⅛, 1¼, 2⅝, 2¾ in.; Rock Drill do., ⅝, ¾, ⅞, 1, 1¼ in.; Square C. S., ⅝, ¾, ⅞, 1¼, 1⅜, 1½, 1⅝, 1¾ in.; Round (hammered then rolled), ⅜, ½, ⅝, ¾, ⅞, 1, 1⅛, 1 1-16 in.; Hexagon, ¼ to 2¼ in.; 75 bars Flat, ⅜ x ½ to 2½ x 2 in.

This Steel is all of best quality and will be sold low.

Kelly Steel Barb Wire.



Patented in 1868, and fully licensed under all the bottom patents. Its

WEIGHT IS ONE POUND TO THE ROD,

and is a Fence for a lifetime.

Is adopted by railroads, by stock raisers and by farmers generally, on account of its superior style of barb, giving **STRENGTH AND LIGHTNESS,** and always holds its sharp point. In the

BARB WIRE LAW SUITS

a decision has been rendered **sustaining all the Patents,** and all manufacturers, dealers and users infringing will be held liable for damages.

We do not sell to jobbers, but want one reliable retail dealer in each town.

THORN WIRE HEDGE CO., 34 & 36 Canal St., Chicago.

SIDNEY SHEPARD & CO.,

PROPRIETORS OF

THE BUFFALO STAMPING WORKS.

TRADE Established 1836. BUFFALO & CHICAGO. MARK

MANUFACTURERS OF

STAMPED & JAPANNED TIN WARE

Retinned Ware, Plain Pieced Tin Ware, Bathing Apparatus, Toilet Ware, Tin Toys, Spoons, Flesh Forks, Cake Turners, Coal and Fire Shovels, Pokers, Fry Pans, Stove Skillets, Coal Hods, Coal Vases, Water Coolers and Filters, Harness Oil Cans, Soldering Coppers.

Dripping Pans, Elbows, Milk Cans and Fixtures, Roofing Nails, Stove Boards, Transportation Cans, Buffalo Champion Ice Cream Freezers.

PERFORATED SHEET IRON FOR PAPER MANUFACTURERS AND MALT KILNS.

Grocers', Druggists' and Spice Mills' Tin Ware a Specialty.

Also, A LARGE LINE OF MISCELLANEOUS HOUSE FURNISHING HARDWARE.

Send for Illustrated Catalogue. Address

SIDNEY SHEPARD & CO.,

Buffalo, N. Y., or Chicago, Ill.

IRON AND STEEL DROP FORGINGS

All shapes, small and large, including

Gun, Pistol, Wrench Bars, &c. Also, Die Sinking. Manufacturers also of Bricklayers', Moulders', and Plasterers' Tools, Saddlers' Round and Head Knives.

WILLIAM ROSE & BROS.,

36th & Filbert Sts., West Philadelphia.

HOOPES & MERRY,

Manufacturers of

"LION" Brand or B. B.—"PHŒNIX" Brand or Best Charcoal

GALVANIZED SHEET IRON,

539, 541, 543, 545 and 547 West Fifteenth Street, New York.

Corrugated Sheet Iron, Black or Galvanized. All kinds of Ironwork, Tinned or Galvanized.

A. Garrison. J. H. Ricketson. Wm. Holmes.

PITTSBURGH FOUNDRY.

A. GARRISON & CO.,

Manufacturers of

Chilled Sand and Patent Homogeneous Steel

ROLLS,

Both Solid and Hollow.

Ore and Clay Pulverizers, Rotary Squeezers Haskin's Patent Double Spiral Pinions, and **Rolling Mill Castings of every description.**

OFFICE, 6 Wood St., - - PITTSBURGH.

MARSHALL LEFFERTS & CO.,

90 Beekman St., New York City,

MANUFACTURER AND DEALER:

Galvanized Sheet Iron,

1st and 2d Qualities.

Galvanized Wire, Telegraph and Fence; Galvanized Hoop and Band Iron, Galvanized Rod and Bar Iron, Galvanized Nails, Galvanized Chain, Galvanized Iron Pipe.

CORRUGATED SHEET IRON

For Roofing, &c., Galvanized, Plain or Painted.

Best Charcoal, Best Refined and Common

SHEET IRON.

Plate and Tank Iron,

C No. 1, C H No. 1, C H No. 1 Flange, Best Flange Best Flange Fire Box, Circles.

BOILER IRON

Stamped and Guaranteed.

All descriptions of Iron Work Galvanized or Tinned to order.

Price list and quotations sent upon application.

CHAS. G. LUNDELL,

No. 7 Exchange Place,

BOSTON,

Mass.

SWEDISH IRON

REPRESENTING

Ekman & Co.

GOTHENBURG

SWEDEN.

J. B. SHANNON & SONS

1009 Market St., Phila.

Manufacturers of

ART METAL WORK

FOR

Furniture Decoration

AND FINE CABINET LOCKS

Catalogues Sent Free.

NORTH BROS.

33d and Race Sts., Philadelphia.

Fine Light and Medium-Weight GRA

IRON CASTINGS to order.

Correspondence solicited.

CORRUGATED AND CRIMPED IRO

ROOFING & SIDING

Iron Buildings, Ro Shutters, Doors, Cornic Skylights, Bridges, &

MOSELEY IRON BRIDGE AND ROOF CO

5 Day Street, New York.

Bonnell, Botsford & Co

Iron, Nails & Spikes

YOUNGSTOWN, OHIO.

MOSES GOLDSMITH & SO

Key Box 156,

CHARLESTON, S. C.

Wholesale dealers in

METALS, IRON, RAG

And all kinds of Paper Stock.

We invite correspondence.

S. CHENEY & SO

Manlius, N. Y.,

Small Gray Iron Castings

We warrant our work for smooth and finish.

LOGAN IRON AND STEEL C

218 South 4th St., Philadelphia, P

GREENWOOD & EMMA C. B. C. PIG I

REFINED AND CHARCOAL BAR IRO

Works at Lewistown, Pa., and Greenwo

States did not desire an annexation of territory, but only a reciprocity of commerce. They have commenced to discover now of how much value to them such a reciprocity is. The feeling toward America has undergone a radical change, and even Diaz is fostering the investment of foreign capital. The inauguration of our system of railways in that country is now universally desired, and every enterprise looking to a union between America and Mexico is heartily encouraged." Disappointment may follow, but it is evident that American capitalists are indulging great expectations respecting the future industrial development of Mexico, through the the efficacy of lines of railroad. The danger is in carrying railroad extension to excess. We have gone quite far enough in that direction already.

Cements and Glues.

At a recent meeting of the Polytechnic Club of the American Institute, Dr. John Phin read an interesting paper on cements and glues which we condense as follows:

Cements are to be divided into four classes, according as they dry, congeal by oxidation, harden by cooling, or "set" by other chemical changes. First are those which harden by evaporation. Under this head may be classed paste, mucilage and their varieties. Glues to a certain extent dry.

The second class includes the oils. These are said to dry, but it is not by evaporation. They lose nothing, but absorb oxygen from the air. The cement weighs more after hardening than when first applied. Cements which congeal by oxidation cannot be treated in the same way as those of the first class. They require a longer time to handle. The hardening goes on from the outside inward. For example, mend a piece of porcelain with one of these cements. Test it in a few days, and although the outside will be hard the inside will not appear to have dried in the least, and will have no tenacity. Leave it for six months, and it will be very strong.

Thirdly, we have those cements which harden by cooling. These, instead of gaining their strength slowly, like those of class two, become hard at once. Shellac is a good example of a cement of this kind. China put together with melted shellac is extremely strong.

A fourth class of cements may be represented by plaster-of-Paris. This is the type of an extensive class, including the whole line of mortars and hydraulic cements, on which depend our great engineering works and even the houses in which we live. It forms a chemical compound combination with water first, and then more slowly hardens by drying, a part of the water evaporating.

In order to use a cement successfully we must know to what class it belongs and treat it accordingly. Next, we must know how to put it on. In no case should it be used in a large quantity. The less the better is a good rule to follow.

In mortar we mingle sand, which makes the actual thickness of the lime between the stony surfaces in all cases very slight, however much mortar we may employ. In the use of glue this is not practiced or necessary. The joints made by carpenters are good examples of the minute quantity of a cement which is necessary. Place a well-made glued joint on the edge, and it is almost impossible to find the lines of glue. Its position is mainly discovered by the direction of the grain of the wood.

Intimate contact between the cement and the edges is necessary. This is not easy, on account of the layer of air which adheres to all bodies. This layer of air is what causes needles to float when carefully placed upon the surface of water. When an object is warmed the film of air is easily moved. The hot needle sinks, and to the hot body the cement will adhere easily. It is faulty for this reason, that in gluing it is needful to have the work warmed. The rubbing of the surfaces together gets rid of the air, and then not only with glue, but with all cements, the surfaces must be pressed closely together.

Common glue has enormous strength and adhesive powers if it is good. But to be good it must not have been injured in the making by decomposition; not only is the glue itself liable to be injured in this way during the process of manufacture, but the animal matters such as skin, offal from the slaughter houses, hoofs, &c., are peculiarly liable to decomposition. When this happens the quality of the glue suffers in proportion. In the process of manufacture itself, which is a kind of jelly making on a large scale, there are numerous accidents which are liable to injure the quality. All of them seem to be forms of decomposition; in fact, glue is not free from danger in this respect until it is entirely dry. The best glue will be pleasant to both taste and smell, and if it is not so its strength has been impared. If in no way offensive either to taste or smell, it may be trusted to hold wood more firmly than its own fibers adhere to each other.

The strongest known glue is that made from the skins and sounds of fishes; this is known under the name isinglass or fish glue, and the strongest glue of this kind is made by the Laplanders from the skin of a kind of perch. The Laplanders use it in making their bows, which are both strong and durable. In making it their cold climate is greatly in their favor; here a fish-skin will begin to undergo decomposition before it can be dried.

In making it the skins are put into a bladder, which answers for a water bath, and heated in water until a sort of glue results. This glue is, as may be imagined, very elastic. Isinglass is very liable to be spoiled in making by overheating.

The pastes are all made from starch in some of its forms. Gluten is also used for a paste, but starch is the best. All additions of rosin, &c., commonly recommended are a damage to paste.

Dextrine, or "British gum," is of immense value in the arts as a cement. It is derived from starch by roasting or by the action of nitric acid. It was discovered by accidental overheating of starch, and its process of manufacture was for a long time kept secret. Its chief use for some time was in the cotton manufacture. It is the standard gum for postage stamps, though it is said that gum-arabic and cheaper substitutes are used in this country. [Dextrine is one of the most valuable substances which we have for making pastes, &c., and deserves to be more generally known. Its usefulness as a material for sticking paper is much greater than gum arabic, being free from many of the objectionable features of the latter.]

No cement can be fire-proof which contains organic matter, since this is decomposed at a temperature about that of melting lead, or, say, 600° F. Cements containing oils will not be fire-proof.

Silicate of soda mixed with asbestos is the nearest to a fire-proof cement. It will stand a low, red heat. It is decomposed at a bright red.

Water-proof glues are made in two ways. Glue and linseed oil are recommended, but I have had little success with the mixture. The chromates may be used with glue. These, when exposed to the light, render the compound insoluble. Unfortunately, although water will not dissolve a glue thus treated, it still has an action upon it. The glue has in fact been, as it were, tanned by the combined action of the bichromate and the light. It will, like leather, swell up and soften when long exposed to water.

Aquarium cement is the best water-proof cement I know. The formula is:

Litharge	3	Rosin	1
White sand	3	Boiled linseed oil	-
Plaster of Paris	3		

The solids are to be taken by measure in powder and mixed. As it sets rapidly, the set must not be added until it is wanted for use. It is better for being put into a mortar and pounded. It hardens in three days. It will hold glass firmly, and with it glass tanks may be made without frames, if the angles are well filled with cement. It is a kind of mastic, and could be used on brick.

What is technically known as marine glue stands almost by itself. Where it can be put on hot it is admirable. It is composed of india rubber and shellac, dissolved in naptha. Some kinds are hard, some almost liquid. I have seen this glue adhere to glass so firmly as to tear the glass when plates were separated.

In answer to a question the speaker said that stratena, whose wonderful powers are so frequently exhibited upon the streets, is probably only the old Armenian cement. This is so strong that it will hold jewels in place, and is used for this purpose by the Armenian jewelers, who merely flatten the settings of their precious stones and then stick them in place upon the metal with this cement. It is made by dissolving isinglass in alcohol along with gum ammoniac. When well made it is perfectly transparent.

The Northern Coast of Africa.

In his recent lecture in this city, entitled "A Cruise Along the Northern Coast of Africa," Commander Gorringe, United States Navy, stated many facts of unusual interest. He called attention to a fine enlarged map of the northern coast of Africa to show the proximity of two portions of the globe that present the greatest contrast—the highest civilization of Europe and the almost depopulated condition of the once fertile country, with its magnificent cities and cultured people, that lies between the Great Desert and the Mediterranean Sea. This strip of land is gradually becoming more narrow, and the once great cities of the Pentapolis are nearly buried beneath the sands of the desert. The speaker alluded to the French plan of cutting a canal of 102 miles, admitting the waters of the Mediterranean into the sunken portion of the desert, at a cost of $500,000,000.

"Opinions differ," he said, "as to the feasibility of cutting a canal to flood the depressions and as to the results of flooding them. It is conceded that the evaporation from the flooded area would be sufficient to ameliorate the climate of Southern Tunis and reclaim for cultivation a vast region now arid and uninhabited. The soil needs only water to render it unequalled in fertility. Wherever springs or wells afford a supply for irrigation an oasis is found yielding grain and fruit in abundance. The extremes of temperature, now very great, would be diminished. We observed in our camp on the desert in February, 1878, a range from 20° F. at three in the morning to 86° at noon. Unable to lie still long enough to go asleep after midnight for the cold, we were almost overcome by the heat of midday. One of the great advantages to be derived from flooding the valley would be the creation of a water way to the southern provinces of Algeria, and this accounts for the great interest shown by the French in the subject. M. de Lesseps visited the region, and a canal would probably have been commenced had his intention not been diverted to Panama. Notwithstanding the fact that the route of the proposed canal passes through many miles of quicksands, in which caravans that have lost their way in crossing the *chotts* have been swallowed up, the French engineers regard it as entirely feasible. Doubtless they will find it as easy to control the quicksands of Africa as the floods of the Chagres in Central America. Cutting a canal 102 miles through a desert is doubtless as easy to a Frenchman as demolishing a mountain or two on the Isthmus of Panama. The estimated cost of the canal is about $500,000,000, and it does seem to me that such an outlay would not be justifiable for flooding an area of 3000 square miles—about one-tenth of that of Lake Superior. The world is not yet so thickly peopled as to make it necessary to provide more room. We can offer to European emigrants for some years to come fertile lands for cultivation at lower rates than the promoters of the French inland sea scheme could afford to sell land reclaimed at such a cost."

He spoke of his journey to the Great Desert, and said: "Not the least interesting recollections of my trip to the proposed inland sea are those of the numerous Greek and Roman ruins that were scattered along the route. Vestiges of ancient towns were seen where now there is not a living creature. A part of our route lay along an old Roman road marked by the ruins of small forts and block houses at short intervals. At one oasis, where we rested at midday, our guides took us to an old Roman bath

AUBURN FILE WORKS,

Superior Hand-Cut

FILES AND RASPS,

MADE FROM IMPORTED STEEL. EVERY FILE WARRANTED.

FULLER BROS., Sole Agents,

89 Chambers and 71 Reade Streets, N. Y.

HELLER & BROS., Newark, N. J.,

Manufacturers of the

Celebrated Hand-Cut American

HORSE RASPS AND FILES,

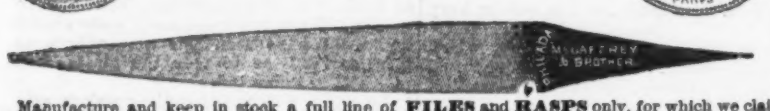
Made of the best American Steel and warranted to be unequaled in the market. For sale by Iron and Hardware dealers throughout the United States and Canada.

Paris, 1878. *For Superiority.*

McCAFFREY & BRO.,

PENNSYLVANIA FILE WORKS,

Philadelphia, Pa., U. S.



Manufacture and keep in stock a full line of **FILES** and **RASPS** only, for which we claim special advantages over the ordinary goods, and ask domestic and foreign buyers to allow us to compete for their trade.

Superiority acknowledged wherever used, sold or exhibited.

GRAHAM & HAINES,

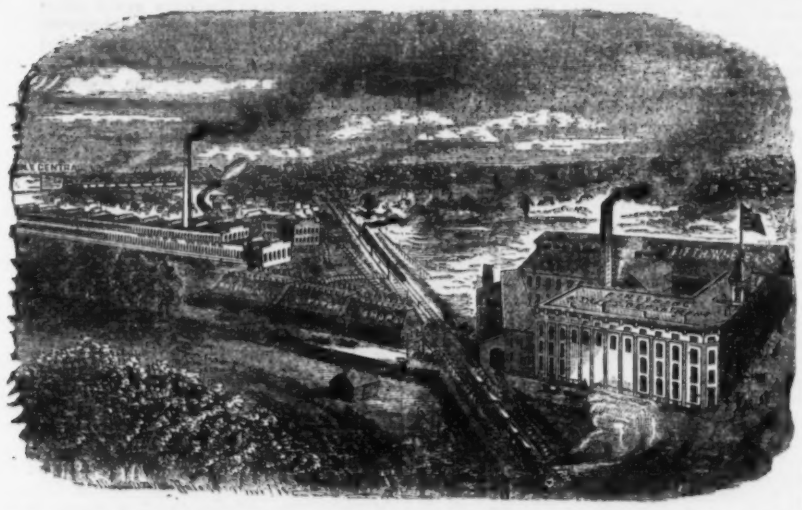
P. O. Box 1040. **113 Chambers and 95 Reade Streets, New York.**

HARDWARE MANUFACTURERS' AGENTS, as follows:

Lawrence Curry Comb Co., Curry Combs.
Howard Bros. & Co., Cotton, Wool and Curry Cards
Thompson, Derby & Co., Scythe Snaths.
Otsego Fork Mills, Steel Forks, Rakes, Hoes, &c.
H. Knickerbacker, Scythes, Axes and Tools.
H. W. Kipp, Nail Hammers.
Iron City Tool W'ks Ld, Vises, Picks, Mattocks, Grub Hoes, &c.
Jacobus & Minick Mfg. Co., Locks, &c.
Sandusky Tool Co., Planes and Plane Irons.
Geo. M. Eddy & Co. Measuring Tapes.
Wheeling Hinge Co., Hinges and Wrought Butts.
Northwestern Horse Nail Co. Horse Nails.
A. G. Coes & Co., Coes' Genuine Screw Wrenches.
F. K. Silby, Emery Cloth.
Sedgwick Mfg. Co., Butter and Flour Triers, etc.
Ripley Mfg. Co., Mouse Traps.
Sam'l Loring, Plymouth Tack & Rivet Works.
Carr, Crawley & Devlin, Miscellaneous Hardware & Cast Butts.
J. Mallinson, Cast Steel Shears and Scissors.
Ketchem's Pat. Metallic Sleeves.
W. D. Turner & Co., Geneva Hand Fluters.
American Screw Co., Gimlet Pointed Screws, &c.
Romer & Co., Brass Locks, &c.
P. Loventraut, Compasses, Callipers, Dividers, &c.
Clark Bros. & Co., Carriage Bolts, &c.
Lowerre & Tucker, the Genuine Knox Fluting Machine.
T. B. Barclay, "Dodge's" Kentucky Cow Bells.
Lane Bros., Swift's and Grocers' Coffee Mills and Measuring Faucets, &c.
T. C. Richards Hardware Co. Bright Wire Goods. Picture Nails, &c

---

CARRIAGE HARDWARE.



Our new Illustrated Catalogue of 140 pages, and over 300 illustrations, will be mailed on application.

THE E. D. CLAPP MFG. CO., Auburn, N. Y.

HUNDLEY & HANKS,

PROPRIETORS OF

NORTH CAROLINA HANDLE CO.

MANUFACTURERS OF

Handles and Spokes,

79 Reade Street and 97 Chambers Street, - - - - NEW YORK.

HARDWARE COMMISSION MERCHANTS.

TACKS, NAILS & RIVETS.

Swedes Iron Upholsterers' Gimp, Lace and Card Tacks. Black and Tinned Trunk and Clout Nails. Finishing Nails and Brads; Shoe Nails of Swedes and Common Iron; Copper, Brass & Steel Lining & Saddle Nails; Tufting Nails & Tufting Buttons; Brass and Iron Wire Nails, Molding Nails, Escutcheon Pins, Black and Galvanized Regular and Chisel Pointed Boat Nails.

New York Salesroom, 116 Chambers Street.

AMERICAN TACK CO., Fairhaven, Mass.

R. COOK & SONS,

Manufacturers of

Carriage & Wagon AXLES,

WINSTED, CONN.

ESTABLISHED - - - - 1839.

HAND-CUT **FILES** Established 1868

JOHNSON & BRO.

No. 1 Commercial Street, Newark, N. J.

Nicholson FILES.

Bandsaw Files,
Boot Heel,
Brass,
Cabinet,
Cant,
Cotter Taper,
Cotter Equaling,
Cross or Crossing,
Doctor,
Drill,
Feather Edge,
Finishing,
Flat,
Flat Equaling,
Flat Wood,
Gang-Edger,
Ginsaw,
Gulleting,
Half-Round.
Half-Round Wood,
Hand,
Hand Equaling,
Handsaw Blunt,
Handsaw (Double-Ender),
Handsaw Taper, single cut,
Handsaw Taper, double cut,
Handsaw Taper, slim,
High Back,
Hook-Tooth,
Knife,
Knife Blunt,
Lead Float,
Lightning,
Machine Mill,
Mill,
Mill Blunt,
Mill Pointing,
Pillar,
Pitsaw,
Reaper,
Roller,
Round,
Round Blunt,
Slotting,
Slim Handsaw Taper,
Square,
Square Blunt,
Square Equaling Files,
Stave Saw,
Three-Square Files,
Three-Square Blunt Files,
Tumbler Files,
Union Cut,
Warding Files,
Warding Blunt File,
Warding Round Edge File.

RASPS.

Baker's,
Beveled Edge,
Bread,
Cabinet,
File, Flat and Half Round,
Flat Shoe,
Flat Wood,
Half-Round Shoe,
Half-Round Wood,
Horse, Plain and Tanged,
Horse Mouth,
Jig,
Oval or French Shoe,
Racer, Plain and Tanged.

SPECIALTIES.

Butchers' Steels, Improved,
Bent Rifflers, Handled,
File Cards,
File Brushes,
Machinists' Scrapers,
Stub Files & Holder, Detachable.
Surface File Holder,
Vise File Holder.

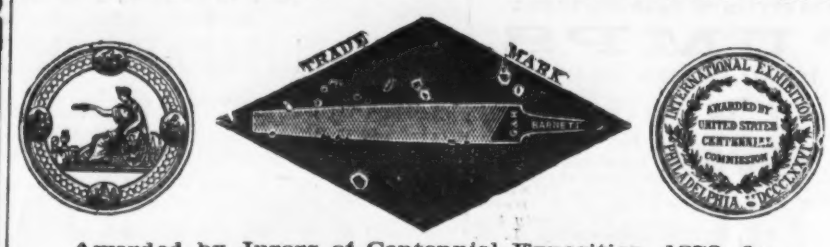
NICHOLSON FILE CO.,

PROVIDENCE,

R. I.,

SOLE MANUFACTURERS.

Black Diamond File Works.



Awarded by Jurors of Centennial Exposition, 1876, for "VERY SUPERIOR GOODS."

G. & H. BARNETT

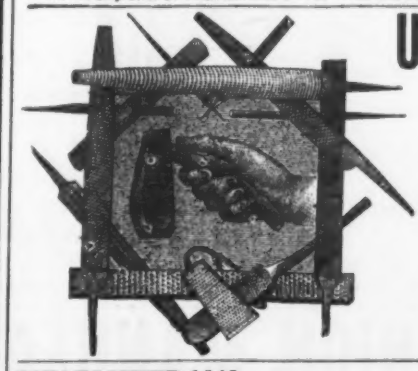
39, 41 & 43 Richmond St., Philadelphia.

CHARLES B. PAUL,

Manufacturer of HAND CUT FILES.

Warranted CAST STEEL. 187 Tenth Street, Williamsburgh, New York.

All descriptions of Files made to order. Price List mailed on application. Established 1863.



UNION FILE WORKS,

311 to 315 North St.,

BALTIMORE, MD.,

Manufacturers of

FILES AND RASPS

Made from the Best Refined Cast Steel.

With all the requisite facilities to produce a first-class article, we are enabled to offer Files that will give entire satisfaction.

MORITZ & KEIDEL, Agents,

48 & 50 German St., Baltimore, Md.

ESTABLISHED 1842. **INCORPORATED 1881.**

CHAS. F. CRIPPS, President. GILBERT PARKER, Treas. and Gen. Agent.

THE J. BARTON SMITH CO.,

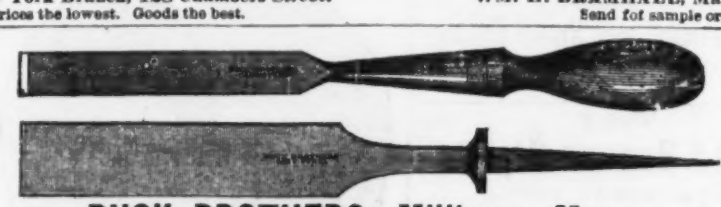
Manufacturers of the Celebrated

J. B. SMITH'S FILES, RASPS, WOOD SAWS, &c.,

211, 215 & 217 New Street, PHILADELPHIA.

New York Branch, 128 Chambers Street. WM. H. BRAMHALL, Manager.

Prices the lowest. Goods the best. Send for sample order.



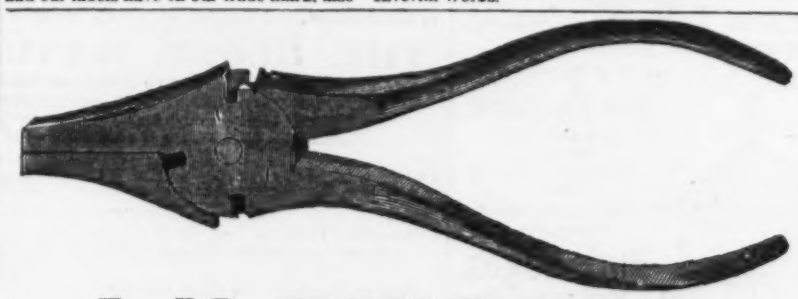
BUCK BROTHERS, Millbury, Mass.

The most complete assortment in the U. S. of

Shank, Socket Firmer and Socket Framing Chisels,

PLANE IRONS.

CAUTION.—Buyers should be on their guard and not have inferior goods palmed on them by unprincipled persons, who represent them as our make. Our tools are stamped "BUCK BROTHERS," and our labels have on our trade-mark, also "Riverlin Works."



J. M. KING & CO.,

WATERFORD, N. Y.,

Manufacturers of the BUTTONS PATENT

"WIRE CUTTER AND PLIER COMBINED."

Specially Adapted for Use on Wire Fence.

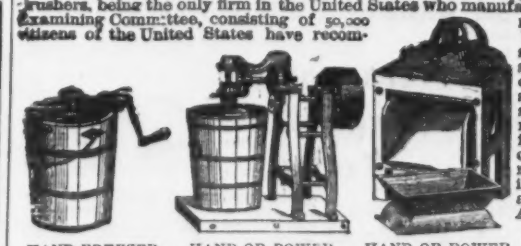
Also Manufacturers of

Blacksmith and Machinists' Stocks and Dies, Plug and Taper Taps, Hand, Nut and Screw Taps, Pipe Taps and Reamers.

Price List on application. Established by DANIEL B. KING, 1829.

SANDS' TRIPLE MOTION WHITE MOUNTAIN ICE CREAM FREEZERS.

THE WHITE MOUNTAIN FREEZER COMPANY are headquarters for Ice Cream Freezers and Ice Crushers, being the only firm in the United States who manufacture all parts of the raw material. The Examining Committee, consisting of 50,000 citizens of the United States have recommended the *Sands' Triple Motion White Mountain Freezer* to all persons in the world for the following reasons: We have used them; they freeze quicker than any other; they save time, salt and ice; the triple motion makes smooth cream without bunches; makes more of it; galvanized iron outside; tin inside; no zinc in contact with the cream; easily adjusted; substantially made; simple in construction; perfect in results. Send for descriptive circular and discount of this celebrated Freezer. Address,

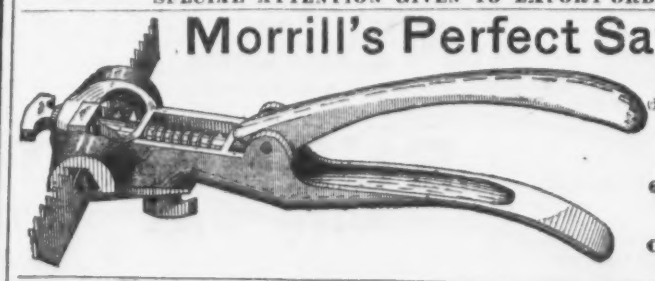


HAND FREEZER. 2 to 25 qts. $3.50 to $25.00.
HAND OR POWER. 25 and 50 qts. $75.00 and $175.00.
HAND OR POWER ICE CRUSHER. $75.00.

White Mountain Freezer Co., Laconia, N. H., U. S. A.

SPECIAL ATTENTION GIVEN TO EXPORT ORDERS.

Morrill's Perfect Saw Sets.



For price lists and discounts, address

ASA FARR,

64 College Place,

corner of

Chambers Street,

New York.

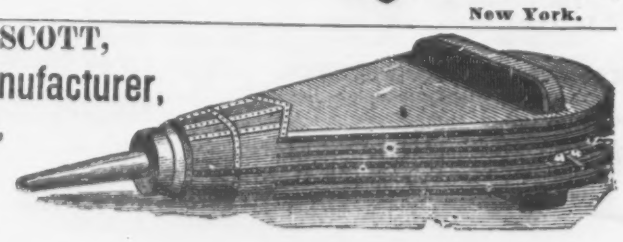
GEO. M. SCOTT,

Bellows Manufacturer,

Johnson Street,

Cor. 22d St.,

CHICAGO, ILL.



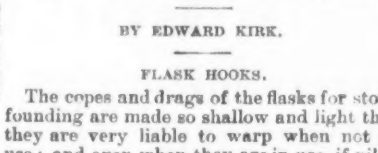
faced with marble and in excellent preservation, through which a hot spring flowed abundantly. Where the water came out of the ground, at some distance from the bath, it was so hot that it was painful to keep our hands in it. The spring is highly prized by the Arab inhabitants for its curative properties."

Papers on Practical Founding—XX.

BY EDWARD KIRK.

FLASK HOOKS.

The copes and drags of the flasks for stove founding are made so shallow and light that they are very liable to warp when not in use; and even when they are in use, if piled up carelessly over night, they will often get twisted so that the drag will not lie solidly upon the follow-board, or the cope upon the drag when rolled over and the follow-board removed, and it is more difficult to make the mold in them. To prevent the cope and drag from warping when not in use, and to assist in holding them together when the mold is poured, small iron hooks are secured to the sides of the drag by staples, and when the mold is made they are hooked into small staples on the side of the cope so that the cope and drag are held together, preventing the former from being lifted by the upward pressure of the molten iron. When the work is shaken out the cope and drag are allowed to remain hooked together, which prevents the pins from being torn loose or broken off; and when not in use they are always hooked firmly together, which makes them less liable to spring. If they do spring, they both spring the same way, which is not so bad as if they sprung in opposite directions, or as if only one part were sprung. Various styles of these hooks are used, all of them having their peculiar advantages; but they are all made of such a shape that the further the point of the hook is driven into the staple in the cope the closer it will draw the cope and drag together. Fig. 44



Practical Founding.—Figs. 44, 45 *and* 46.—*Flask Hooks.*

represents the hook most commonly used. It is generally made of three-eighth round iron; the eye is securely welded to prevent its yielding, and the hook end is made so that it will draw the hook upon the staple, both in the cope and drag, and draw them close together. In Fig. 45 is shown a flat hook. This is designed to be made of cast iron, and is as good a hook, while it lasts, as the other, but it is very easily broken, a slightly hard stroke of the molder's hammer being sufficient to break it; and when a hook is broken, it is a great deal of trouble to draw the staple and put on another so that it will fit properly into the staple in the cope. Moreover, when a staple is drawn from the drag and replaced in the same holes, it always works loose after being used a few times, and the hook is of no service. This hook cost less than the wrought-iron hook, but it is so easily broken that it is but very little used. In Fig. 46 is shown another style of wrought-iron hook. It is made of three-eighth round iron, and the curve in the back near the top is designed to give a little spring to the hook, and prevent it from being easily broken, and also to make it spring upon the staple so that there will be no danger of its flying out when the mold is

Practical Founding.—Fig. 47.—*Cast-iron Clamp.*

poured. This hook is decidedly the best in use, if it be made of good iron and given the proper shape; for it is not easily broken, and when hooked has a constant spring upon the staple and holds the cope and drag more firmly together than either of the other hooks. From what I have seen of it, I should recommend it in preference to either of the others. The number of hooks on a flask varies according to the fancy of the founder; at Pittsburgh and through the West four hooks are generally put on each flask, two on each side, and at Albany and Troy only two hooks are usually employed, one on each side, and on many small flasks no hooks at all are used. The advantage of having four hooks on a flask is that it then requires fewer clamps when molded up. In Albany and Troy more clamps are used on a large flask with only two hooks than would be employed on the same flask at Pittsburgh with four hooks; but enough hooks cannot be put on a large flask to dispense altogether with the use of clamps, and many of our large stove founders prefer to furnish more clamps rather than incur the risk of having the work run out from being clamped with loose or broken hooks. In many foundries, therefore, only enough hooks are put on a flask to hold the cope and drag together when they are being shaken out, or when the flask is not in use; and in some cases, where the flasks are made with long handles on both the cope and drag, no hook at all is used.

CLAMPS.

When the molten iron is poured into the mold, the upward pressure caused by the weight of the metal in the gates, tends to lift the sand and cope of the flask and allow the iron to flow out between the cope and drag. This is prevented to a certain extent by the hooks on the side of the flask; but when the casting has a large flat surface, as stove plate generally has, the pressure is so great that it will lift the cope of the flask with the sand in it and draw the drag up from around the sand, and the iron will flow out under the drag through the cracks made in the sand. In order to prevent this the cope is secured with clamps to the bottom board, under the drag. These clamps are made of various materials and of various shapes, but those most commonly used in stove foundries are cast iron and of the shape shown in Fig. 47. This clamp is generally made about 1 inch wide and three-fourths of an inch thick, and the points or bends on each end are from 1½ to 2 inches long, and of the same width and thickness as the body of the clamp. The length of the clamps varies according to the flask they are to be used upon, but they are always made half an inch longer than the width of the flask and bottom board together; so that, by inclining the clamp a little from the perpendicular, the points can be made to clamp tightly upon the bottom board and the top of the flask. Some founders cut off the outer corners of the points of this clamp and make the body a little heavier in the middle than near the ends; this makes the clamp a little lighter and handier to work with, but it is no better than the clamp shown, and requires more work to make it, for it must be molded in a flask, while the clamp shown can be made in open sand. The cost of these cast-iron clamps is comparatively nothing, for in the majority of foundries every molder has to make his own clamps after he has put up his day's work. They are generally poured with little drops of over iron which would have to be poured into the pig bed, and in case a clamp gets broken, it is thrown into the scrap heap and melted over, so that the only expense the founder is at is the cost of the iron used. Several patent cast-iron clamps for stove flasks have been invented, but their first cost is greater than that of the clamp commonly used, and they are more easily broken and are liable to get out of order. None of them, therefore, have ever come into general use in any but the foundries in which they were invented. Some of these clamps are arranged so that they can be extended or shortened to any desired length, and the flask can be clamped without the use of a clamping iron. They prevent the top of the flask from being worn off by clamping and knocking off the clamps, and they are more convenient and economical for certain kinds of work than the common clamps. Three of these patent clamps are in use in the foundries of William Resor & Co., Chamberlin & Co. and the Eureka Co-operative Foundry, in Cincinnati, and I believe the inventors of the different clamps can be found at each of these foundries by any who may wish to adopt them or make any inquiries in regard to them.

Some foundries do not use cast-iron clamps at all, but make all their clamps of wrought-iron rod about ⅝ inch in diameter. This rod is bent to form a clamp of the same shape as the cast-iron clamp (Fig. 47), and it makes a better one in every respect, for there is more spring to it; it can be sprung on the flask so as to hold better, and in case it is a little too long or short, it can be bent a little, so as to make it fit; it is not easily broken, and is lighter and handier to work with. The only reason that wrought-iron clamps are not used exclusively in stove foundries is that they cost more than cast-iron clamps, and when one gets broken or new ones are wanted, they must be made by a blacksmith, while every molder can make a new cast-iron clamp adapted to his flask whenever it is wanted. The number of clamps required to clamp a flask varies according to the size and shape of the flask and the shape of the casting to be made in it. As a rule, twice as many clamps are required for a flask in stove founding as would be needed for a flask of the same size in machinery founding, for the upward pressure of the molten iron does not depend upon the weight of the casting, but upon its shape and the rapidity with which the iron is poured into the mold. In many cases more clamps are required for a flask in which a plain oven plate weighing only 6 or 8 pounds is molded, than would be needed for one in which a piece of machinery weighing 100 or 200 pounds is molded, so that the weight of the pattern or casting is no indication of the number of clamps required. More clamps are required for a plate 1 foot square and one-eighth of an inch thick than would be required for the same plate if it were half an inch thick, because the iron must be poured hotter and faster for the thin plate than for a thick one, or it will not fill the mold and make a perfect casting before it chills. Now, when molten iron is poured rapidly the flow is stopped suddenly when the mold is filled, and a greater upward stress is exerted on the top than if the plate were thick and the molten iron were poured slowly, so that more clamps are required for a thin plate than for a thick one. A flat plate requires more clamps than a curved or crooked one, and a bottom requires more clamps than a top or side. The number of clamps required on each flask depends entirely upon the shape and thickness of the casting and upon the position of the clamps, for they must be distributed according to the shape of the casting. To learn to clamp a flask properly, like everything else about molding, requires long practical experience.

M. Charnay, director of the Franco-Lorillard Mexican exploring expedition, has much that is interesting to say of a ruined Toltec city, which he discovered in Tabasco, on the coast of the Mexican Gulf. This city was evidently in the far away past a place of considerable importance, as it stretches over a wide area of ground. The long forgotten town is surrounded and dotted over with small hills, and the builders had utilized these natural elevations by erecting thereon a number of temples, pyramids and palaces and had connected their sites by bridges. The largest of the pyramids is 500 feet in hight and a second is fully 300. Nature had had more to do with the monuments than art, as the builders had merely shaped the hillocks into pyramidal form and afterward faced them with stone, and steps were cut out in the sides, paved with a mixture of cement and pebbles. From a careful study of the remains of this ancient city M. Charnay is inclined to believe that it was founded between 1150–1180, and that it was in a perfect state of preservation at the time

that Cortez invaded Mexico. This opinion was strengthened by a conversation with two well-informed Spaniards whom the explorer encountered in San Juan Bautista, who declared that there were to be found in ancient Spanish records statements to the effect that this city was not destroyed until after the town of Vera Cruz was laid out. M. Charnay is satisfied from indications he observed that there are remains of at least two other Toltec cities further up the adjacent mountains, but further investigation is, as stated above, postponed for the present.

British Investments Abroad.

The commercial statistics of Great Britain have shown for many years an excess of imports of merchandise over exports. For the five years ending Dec. 31, 1880, the official figures reported by the Board of Trade are these :

Year.	Imports.	Exports.	Excess of Imports.
1876.....	£375,150,000	£256,780,000	£118,370,000
1877.....	394,420,000	252,340,000	142,080,000
1878.....	398,770,000	245,480,000	123,290,000
1879.....	362,990,000	248,780,000	114,210,000
1880.....	409,990,000	282,810,000	127,180,000
Totals..	£1,911,320,000	£1,286,190,000	£625,130,000

That is to say, the aggregate balance of trade against Great Britain for the five years was £625,130,000, or $3,125,000,000, being an average of £125,026,000, or $625,130,000 per year, a sum very near equal to the value of the total merchandise imports of the United States for the year 1880 Ordinarily, a country which imports more than it exports either pays the difference in gold and silver or runs in debt to foreign creditors. Great Britain does neither. In 1879 and 1880, she did, indeed, export nearly £7,000,000 more specie than she imported, but during the three previous years her specie imports exceeded her specie exports by an aggregate of £10,000 000. The stock of bullion in the Bank of England, which was £21,215,760 on Jan. 5, 1876, stood at £24,269,271 on Jan. 5, 1881. Of the immense imports of gold into the United States during 1879 and 1880 only the £7,000,000 just mentioned came from Great Britain, the remainder having been furnished by France and Germany. Nor do we hear of British tradesmen and British corporations being indebted to foreigners. No British commercial paper is to be found seeking for discount in European or American money markets, and no bonds of British railroads and other undertakings are hawked upon foreign stock exchanges. Of the enormous amount of merchandise and specie which has been poured into Great Britain within the past five years, more than $3,000,000,000 worth has been used up and consumed in various ways, and the world outside has nothing to show for it. Moreover, the country contrived every year to furnish nearly £50,000,000 for new enterprises—the total for five years having been nearly £240,000,000, or $1,200,000,000.

In partial explanation of the phenomenon, it must be considered that the Board of Trade returns, from which our figures are taken, reckon both imported and exported merchandise at its market value at British ports, and, consequently, that the amount of imports is swelled by freights and charges, while that of exports remains at the bare shipping price of the goods. Now, three-fifths of the tonnage which arrives at and leaves Great Britain belongs to British owners, and since it may reasonably be assumed that freights are shared in the same proportion, it follows that during the last five years British vessels have brought home annually £267,600,000 worth of merchandise and carried away £180,100,000. Allowing that the freights on imports, which are mostly bulky articles, such as grain, flour, beef, cotton and other raw materials, are 10 per cent. of their value, and that they are 5 per cent. on exports, which, being mostly manufactured goods, are more costly in proportion to the room they occupy, we shall have £26,760,000 as the freight earned on imports and £9,000,000 for that earned on exports. Add to these again an average of 2½ per cent. on imports to represent the profits of the importing merchants, and we shall have, on annual imports of £382,260,000, the sum of £9,560,000 more. The apparent balance of trade against Great Britain is, therefore, greater than the real balance by the amount of these three items, namely, £45,320,000, so that the real balance is about £80,000,000. Even this is an immense sum, and the question how Great Britain pays it is highly interesting. The answer is that she does not have to pay it at all; that it is nothing but the remittance to her of the income of her citizens from the investments they have made abroad, sent home in the form of goods.

The British people are distinguished not only by a spirit of adventure and enterprise, which scatters them over the face of the earth in search of fields for the exercise of their money-getting talents, but also by an intense love for the country of their origin. Wherever the Briton may go to build up his fortune—whether to America, Africa, Asia or the islands of the Pacific—he always looks back lovingly and regretfully to his native land. In the thought and in the speech of the British settlers in Canada, Australia and New Zealand; of the British merchants and bankers of New York, Calcutta and Hong Kong, and of the British engineers and contractors who conduct British enterprises in South America, Egypt and India, Great Britain is always home, and the hope of their life is to go back and live there after their painful exile, lucrative as it may be, is ended. The centrifugal force, strong as it is, which carries the British abroad, is not so strong as the centripetal attraction which draws them homeward, and thus it happens that every year thousands of men who went away in their youth poor, come back in their old age rich, to spend for the remainder of their days their incomes in Great Britain, but leaving behind them the investments from which those incomes are derived. England and Scotland are sprinkled thickly with the luxurious country places of such men. They cluster in the smaller provincial towns, and their London residences vie in magnificence with those of home-bred millionaires.

In addition to these returned exiles, Great Britain is the refuge of a considerable number of wealthy Continental Europeans whom either political necessities have driven to her shores or who have been attracted thither by the charms of her town and country life. The Empress Eugénie, for example, has made her home in England, and spends there the ample fortune prudently laid aside by her late husband for the contingency of his downfall. The Empress of Austria goes every winter to Ireland for the hunting season. Rich noblemen and bankers from France, Germany and Italy find London, during the gay season, in spite of its fog and smoke, a most agreeable watering place, and rich Americans who have made the same discovery are beginning to join them. All this large class have property outside of Great Britain on which they draw for their expenses, and the sums sent to them form no inconsiderable part of the balance we are considering.

Then, again, numbers of capitalists, who have never been out of Great Britian, are driven by the difficulty of finding sufficiently productive home investments into sending their capital abroad, and in this they have been naturally encouraged and assisted by their countrymen in foreign lands. The mines of tin, iron and coal with which England is endowed, the ingenuity of her artisans, and the skill and enterprise of her manufacturers have, until lately, at least, been producing material wealth more rapidly than it could be consumed. The surplus, whatever it was, has helped to swell the fund on which Great Britain now draws. An immense amount has been lent to foreign governments. Large sums have gone to purchase the bonds and stocks of our American railroads. Other sums are invested in private loans, in banking institutions, and in shares in various corporate undertakings. The result is that Great Britain stands to the rest of the world somewhat in the same relation that a pleasure resort like Newport does to the rest of this country. If accurate returns could be had of the merchandise carried to Newport every year, the dresses and furniture, the provisions, wines and fruits, the food for horses and cows, and the building materials employed in the construction of houses, and if the value of these were to be compared with those of the agricultural products and the manufactures sent out from the place, the balance of trade against it would be found to be far greater in proportion than that against Great Britain, and the explanation of it would be similar. Newport, like Great Britain, is the abiding place of rich men, whose wealth is invested elsewhere.

A precise computation of the foreign investments belonging to residents in Great Britain is, of course, impossible, since nothing short of an inspection of their private books and papers would furnish the necessary facts. A tolerably approximate estimate may, however, be arrived at in another way. As we have said, a great deal of British money has been lent to colonial and foreign governments, and to railroad, municipal and other corporations in the colonies and foreign countries, and a great deal has been invested in shares of companies formed for the purpose of carrying on industrial and commercial enterprises abroad. In Great Britain, as in this country, the ancient Roman institution of the *collegium* has developed into forms and been applied to purposes as various as they are novel, and the recent adoption there of our American principle of the limited liability of corporate shareholders has largely stimulated the adoption of this convenient method of combining the means of small investors into large aggregate amounts. And as all these various investments are constantly changing hands, the particulars of them have become known, and are accessible to the public. A brief and compact account of them is found in the London *Daily Stock and Share List*, a publication similar to our New York *Stock Exchange Quotation List*, only more thoroughly made up, and which appears on the afternoon of every business day. It furnishes a complete catalogue of all the securities dealt in on the London Stock Exchange, the amount of capital represented by each, the dividend or interest they yield, the prices bid and asked and the business done in them for the day. Some idea of the enormous extent of the field thus covered may be gained from the fact that the list is a sheet of four pages nearly as large as those of our daily New York newspapers, and contains the names and particulars of nearly 2000 securities. Compared with the New York list, it gives about 2½ times as many titles of stocks and bonds. It is an epitomized ledger of British stock and bond investments, and a summary of their amount. Supplemented by another useful publication, the Stock Exchange Year Book, published every December, it tells us a large part of what for our present purpose we need to know of the manner in which the British people invest their money abroad.

Directing our attention now to those portions of the list which relate to investments in the colonies and foreign countries, we had mentioned, first, Indian Government Securities, the interest on which is paid at the Bank of England, and the arrangements in regard to which are the same as for the national debt. These securities amount to £68,000,000, the whole of which, it is safe to say, is held in Great Britain, and the rate of interest on which is for the most part 4 per cent. India has in addition a debt in rupee currency not dealt in on the Stock Exchange amounting to £104,000,000, the interest on which averages 4 per cent., and of which probably two-thirds, or £70,000,000, belong to British holders.

Then come Colonial Government Securities, or loans made on their own account by British Columbia, Canada, Ceylon, Jamaica, New Zealand, Tasmania, Victoria and other British colonies, a portion of them being guaranteed by the mother country. These are all in sterling money, and the interest on them is paid in London. They amount to £120,000,000, and bear on an average 5½ per cent. interest. All of these may be reckoned as belonging to residents in Great Britain, since the money was borrowed there originally, and the rate of interest paid is less than that which the colonists are accustomed to getting.

We find next quoted foreign stocks—that is to say, the national debts of foreign countries. Many of these were contracted in sterling money, and the interest on them is

payable by stipulation in London. This category includes borrowings by Brazil, Chili, Italy, Norway, Russia, Spain, Turkey, Egypt and several less important nations. Leaving out the Spanish, Turkish, Egyptian and other loans, of the enormous amount of £400,000,000, which at present are in default, these securities amount in the aggregate to £37,000,000, yielding on an average 5½ per cent., all of which goes to British holders. In addition the list quotes the obligations of Austria, France, the United States and other countries, of which the public debts are owned and dealt in by inhabitants of Great Britain, and which are of the face value of very nearly £2,000,000,000. It is a moderate estimate to reckon one-tenth of this amount, or £200,000,000, as belonging to British holders, and the average rate of interest as being 4½ per cent.

After this, India railway stocks and bonds guaranteed by the Secretary of State for India in Council, are enumerated to the amount of £11,000,000, the interest on all of which, amounting on an average to over 4 per cent., is paid regularly by London agents to investors residing in the United Kingdom.

Shares and debts of railways in British possessions, such as Canada, India and Tasmania, figure in the list for £117,000,000, and yield an average of 5 per cent. per annum. It is fair to estimate at least two-thirds of them, or say £80,000,000 as being held in Great Britain.

Telegraph companies operating cables and land lines, either partially in foreign territory, as the Anglo-American Telegraph Company, or wholly so like the Mediterranean, Black Sea, West India, and similar companies, represent a capital of £25,000,000, on which an average income of not less than 4 per cent. is earned abroad and paid to British capitalists.

Foreign railway stocks to the amount of £57,000,000 and foreign railway obligations to the amount of £40,000,000 come next, a few of which pay nothing, and others as much as 8 per cent. These are not, however, owned exclusively in Great Britain, but we may fairly set down at least £50,000,000 as held there, and the average income yielded by them as 4 per cent.

Next we find quoted American railroad bonds in sterling money, the interest on which is paid by London bankers. They amount to £75,000,000, the interest on nearly all being 6 per cent., and nearly the whole of them being held in Great Britain. Besides these, there are dollar bonds and shares, such as those of the New York Central, Erie and other railroad companies, to the amount of £175,000,000, of which certainly 20 per cent., or £35,000,000, are held in Great Britain, and pay on an average 6 per cent.

Besides all these, we have colonial and foreign mines, water and gas companies in Europe and in North and South America, loans of colonial and foreign municipalities like Quebec, Montreal, Boston, New York, Melbourne, Oamaru, Otago, and other places, tea and coffee plantation companies, asphalt companies, land companies, Suez and other canal shares, guano companies, sugar manufactories, and countless similar enterprises. All of these taken together represent a capital at par of upward of £50,000,000 paying dividends and interest averaging not less than 5 per cent.

Putting the foregoing items together gives the following result:

Investments.	Capital.	Rate.	Total income.
India government securities	£68,000,000	4	£2,720,000
India rupee loans	70,000,000	4	2,800,000
Colonial government securities	120,000,000	5½	6,600,000
Foreign stocks, interest paid in London	370,000,000	5½	20,350,000
Other foreign stocks	200,000,000	4½	9,000,000
India railway debentures	11,000,000	4	440,000
Colonial r'way shares and bonds	80,000,000	5	4,000,000
Telegraph shares	25,000,000	4	1,000,000
Foreign r'way shares	50,000,000	4	2,000,000
American railroad stocks and bonds	110,000,000	6	6,600,000
Mines and miscellaneous	50,000,000	5	2,500,000
Totals	£1,144,000,000		£58,010,000

Or, expressed in our currency, Great Britain has invested abroad in stocks and bonds a capital of $5,700,000,000 and draws from it an annual revenue of $290,000,000. This is exclusive of investments in stocks and bonds not dealt in on the London Stock Exchange, the amount of which it is useless to try to even guess at.

Deducting, now, this £58,010,000 from the average annual balance against Great Britain of £80,000,000, there remains, say, £22,000,000 to be accounted for. A part of this is probably errors in estimating the stocks and bonds belonging to British holders, but much of it also represents the income of commercial capital employed in the United States and other countries. It is not unsafe to say that one half of the money used in New York and other American cities in forwarding our exports, is that of British merchants and bankers, and the same thing is true of other countries; and if we follow the same rule that we did in regard to freights, and allow that three-fifths of the imports into Great Britain are made by the aid of British advances, and that the earnings on these advances at the port of export are 2½ per cent., we shall have nearly £7,000,000 of income from this source. Private investments on bond and mortgage, in real estate in cities and in the country, and in various banking and manufacturing enterprises here and elsewhere, may be credited with £3,000,000 more, reducing the deficiency to be accounted for by £10,000,000, or to £12,000,000. This, as we have said, may be ascribed to errors in estimates, or it may represent capital withdrawn from abroad in addition to income. It is known that for three years past the United States has been paying off her foreign creditors by buying back the bonds, stocks and other evidences of debt which we so lavishly manufactured prior to 1873, and many of these have come to us from British holders; but whether they amount to as much as £12,000,000, or $60,000,000, a year for the past five years, is not so certain, and no other country than ours has been in a condition to pay its foreign debts to any considerable extent. On the other hand, it must be remembered that the £12,000,000 in question represents only the balance of averages, and that the actual figures for the last few months are more favorable; that is to say, the imports are decreasing and the exports increasing. But, however this may be, the facts show that Great Britain is the chief creditor country of the world, and that all other countries have to pay her a tribute of many millions annually.

What to Do with the Telegraph Wires.

Mr. T. B. Dolittle, agent of the American Bell Telephone Company, has a plan for carrying the telegraph wires above ground, but in a more convenient and more ornamental way than at present. He claims that his system would add to the beauty of the city and to the profit of the various companies, which now suffer severely from the effects of destructive storms. His project is to bunch the wires, placing them in a box, insulated, running about the hight of the first story along the curbstone, the box to be supported by light and elegant pillars. A certain proportion of those pillars would contain the screw cups, so that in the event of a breakage anywhere, it would be easy and economical to repair the damage by simply opening the door of the pillar and readjusting the broken wire or wires. These pillars might be utilized also for the support of lamps, and particularly for the electric light, should it come into use. The end section of the box containing the wires shows a triangle, in the sides of which are the pockets that hold the lines of the different companies. The coverings of the pockets overlap each other so as to carry off moisture or rain, and can be readily removed for the inspection of the interior. The base of the triangle (averaging 6 inches, 18 inches being required only in a few places where there is a greater congregation of conductors) is perforated for the purpose of permitting the escape of any water that might by some possibility get inside. The interior space might be made available for the insertion of a pneumatic dispatch tube. The street crossings Mr. Dolittle proposes to span by an arch of a proportion and design that would be beautiful to the eye, or, better still, to carry the wires under the crossings. By the latter method there would be no necessity to open up the roadway should a wire become broken, for in the pillars at the corners would be kept spare wires and an apparatus for withdrawing the damaged line and the insertion of the new. The service of wires to business places and public buildings, the appearance of which now makes the city so unsightly, would, says Mr. Dolittle, be simplified. After passing at right angles to the house, the wire would disappear from exterior view and be carried within the building to any story where required. Moreover, the structure containing the bunched wires could be used by storekeepers and others to attach their awnings to. In the matter of the telephone, the projector claims the great superiority of his system over that of the underground in this, that the telephone being used in almost every other store, should the owner remove to another neighborhood it would, by Mr. Dolittle's plan, be expeditious and cheap to cut the wire and reattach it to the new place of business, whereas, were it underground, both time and money would be expended in getting at the telephone conductor. The cost Mr. Dolittle roughly estimates at a million and a half.

The Latest Novelty in Marine Construction.

The *North British Mail* says: There was launched, March 3, at Messrs. Dobie's yard, the first of three steamers which form an entirely new departure in our commercial navy. The progress in Clyde shipbuilding lately has shown itself principally in an increase of size and power, but very little has been effected to render these immense steamers handier in crowded waters, or to provide for their safe navigation in case of injury to the single shaft and propeller through which the enormous powers now required have to be applied. The owners and designers of the Notting Hill, and her sister steamers the Tower Hill and the Ludgate Hill, now in the course of construction by the same builders, have adopted the twin-screw system, now invariably applied to the armed navies of the world, as they believe the modern transatlantic steamer has reached the dimensions which require the application of means that have, after long trial, been found to ensure speed, handiness and safety. The two screws at the stern of the Notting Hill will propel her 13 knots when laden, will enable her to turn round almost in her own length, and allow her entirely to dispense with her rudder if anything should disable it. Should an accident befall one set of engines, or shafting, or propeller, the remaining set will propel the vessel at a speed of 10 knots, the average of ocean going steamers.

The Notting Hill is built entirely of steel, and she will deliver a larger cargo on her draught than any steamer now running or building. Her between decks, ready fitted with side lights, would carry upward of a thousand steerage passengers, or a whole regiment of soldiers, upon the one deck. She has been specially surveyed by the Admiralty, and her eminent fitness will enable her to take a prominent place in the transport service. She is provided, under Admiralty direction, with coal armor for the protection of her engines and boilers, and with such a number of bulkheads, all extending to the upper deck, that the steamer, when loaded, will float even if one compartment is absolutely open to the sea.

No expense has been spared in carrying out the design thoroughly. Her crank shafts are of the latest improved built description, and of Vickers steel. Her propellers are of the same material, and with movable blades. She is fitted with instantaneous hydraulic starting gear that enables the movements of both propellers to be controlled at the same time by a mere child. She has Harrison's steam steering gear. Her boilers, 10 in number, with 20 furnaces, are of steel, made upon Turner's patent principle, which has excited so much attention and given such satisfactory results.

The Iron Age

AND

Metallurgical Review.

New York, Thursday, April 7, 1881.

DAVID WILLIAMS . . *Publisher and Proprietor.*
JAMES C. BAYLES . . . *Editor.*
JOHN S. KING . . . . *Business Manager.*

RATES OF SUBSCRIPTION
INCLUDING POSTAGE.

THE UNITED STATES, BRITISH AMERICA AND SANDWICH ISLANDS.

Weekly Edition.....**$4.50 a year.**
Issued every THURSDAY morning.

Semi-Monthly Edition.....**$2.30 a year.**
Issued the FIRST and THIRD THURSDAY of every month

Monthly Edition.....**$1.15 a year.**
Issued the FIRST THURSDAY of every month.

TO ALL OTHER COUNTRIES.
PER ANNUM. POSTPAID.

Weekly Edition: $4.00—£1—25 francs—20 marks—12 florins—6 roubles (coin)—25 lire—20 pesetas.

Semi-Monthly Edition: $2.30—10/—12½ francs—10 marks—6 florins—3 roubles coin)—12½ lire—10 pesetas.

Monthly Edition: $1.15—5/—6¼ francs—5 marks—3 florins—1¼ roubles (coin)—6¼ lire—5 pesetas.

REMITTANCES

should be made by draft, payable to the order of David Williams, on any banking house in the United States or Europe; or, when a draft cannot be obtained, in postage stamps of any country.

NEWSDEALERS OR BOOKSELLERS

in any part of the world may obtain *The Iron Age* through the American News Company, New York, U. S. A.; the Wilmer & Rogers News Company, New York, U. S. A., and London, England: or the San Francisco News Co. San Francisco, California, U. S. A.

RATES OF ADVERTISING.

One square (12 lines, one inch), one insertion, $2.50; one month, $7.50; three months, $15.00; six months, $25.00; one year, $40.00; payable in advance.

DAVID WILLIAMS, Publisher,
83 Reade Street, New York.

PHILADELPHIA.....220 South Fourth Street
THOS. HOBSON, Manager.

PITTSBURGH.....77 Fourth Avenue
JOS. D. WEEKS, Manager and Associate Editor.

CHICAGO.....36 & 38 Clark st., cor. Lake
HENRY SMITH, Manager.

CINCINNATI.....Builders' Exchange
T. T. MOORE, Manager.

CHATTANOOGA.....Eighth and Market Streets
S. B. LOWE, Manager.

BRITISH AGENCY.

The publishers of *The Ironmonger*, 44a Cannon street, London, England, will receive orders for subscriptions and advertisements on our regular terms.

CONTENTS.

A Russian engineer of some reputation, named Stephen Goulschamburoff, who is now visiting this country with reference to the petroleum product and its uses, expresses surprise on finding that here we are using "the same kinds of fuel as in gone-by times," when in the Caucasus, which is far isolated from modern civilization, petroleum has been exclusively used as fuel for locomotives and steamers for the last twelve years. He is astonished to see that American engineers are trying to invent some superior mechanical contrivances of their own, rather than adopt inventions already known and thoroughly tested in foreign petroleum producing countries. Aside from the use now being made of petroleum as a fuel at the People's Gas Works in Jersey City, a yacht for Col. Delano, of New York, in which petroleum is to be used as fuel, will be launched near Rockland, Maine, in a few days. We shall doubtless have more satisfactory developments in this line at no distant day.

The Basic Process in the United States.

It was announced too late for our last issue that, on Friday last, what is popularly known as the Bessemer Association had availed itself of the option to purchase the patents owned by Mr. Thomas and his associates, covering the basic process for dephosphorizing iron. The price to be paid is $275,000, in consideration of which sum the Bessemer Association secures the Thomas and Snelus patents for the United States, and all rights and privilages owned by Mr. Thomas and his associates so far as they relate to this country.

The basic process is no longer in an experimental stage, and sufficient idea of its value has already been gained to warrant us in saying that the Bessemer Association has made an exceedingly good bargain. If it in any respect realizes the reasonable expectations of those who have faith in it, the right to control its use in this country is worth a great deal more than it has been sold for. Mr. Thomas evidently made a mistake, in a business way, in committing himself so early to the gentleman who secured the option of purchasing his American rights. Had he conducted his business negotiations solely through his American agent, Mr. Geo. W. Maynard, he would have done much better for himself and possibly for others.

Whether we shall be able to congratulate any one connected with this negotiation remains to be seen. We first want to know what the Bessemer Association propose to do with it. We hear it rumored that it is not likely they will grant licenses to works not now represented in the association, unless well assured that the dephosphorized steel will not be brought into competition with steel from hematite irons. We are also informed that the Bessemer works will not be likely to take it up promptly or generally, and that the two concerns now putting up basic plant will be more disposed to play with the process than to work it seriously. We do not know that these rumors are warranted by the facts; but the Bessemer works are now so fully supplied with orders, and look forward to so satisfactory profits from a continuance of the present imperfect, though rapid, processes of rail production, that we can scarcely expect them to feel much present interest in the encouragement of a process which will so rapidly change and materially cheapen the production of ingot steel. We believe it would have been a great deal better had Mr. Thomas negotiated only for the sale of rights to individual works, giving the manufacturers of open-hearth steel an equal chance to benefit by his discovery. As it stands now, the miners of high grade hematite ores would soon have very little occasion to feel any alarm, or the transportation companies to entertain any expectations of softer and cheaper rails. These delays, should they occur, will be of great advantage to the manufacturers of puddled iron, who will probably have time to see what to expect before they are made to feel the serious competition with which they are now threatened. They would do well to watch the course of events abroad very carefully, as it is on the Continent that the first and most decisive developments may be looked for. As we noted last week, the new converters building or to be built to work the Basic process, will add 800,000 tons to the ingot producing capacity of Europe. There are now twenty-eight converters working this process, having a capacity of say 200,000 tons, adding together say 1,000,000 tons capacity to the already large capacity for producing hematite steel. It is evident that all this capacity cannot be employed in producing steel for rails, and so much of the total product as is not so used must compete with iron. That iron can hold its own in this competition is scarcely probable. It cannot be wholly displaced, but the outlook for the manufactured iron trades is certainly gloomy. It is a good thing for our rolling mills that the Bessemer steel interest is so carefully guarded, and that business considerations may induce those who have secured the Thomas patents to follow, rather than lead, the march of a progress which threatens such serious changes.

The new Chilian minister to the United States, Don Marcial Martinez, says he is especially interested in the task of stimulating the commercial relations between the two countries. Chili, exhausted by a long and costly war, seeks the co-operation of the United States in recuperating her resources. Many of our manufactured goods, he says, as well as our natural products, will find a ready sale in Chilian markets, while the niter beds and guano deposits acquired from Peru by conquest will afford exhaustless supplies of fertilizers to be offered in exchange. Mr. Martinez, who appears fully to comprehend the necessities of his government, will find that his friendly overtures are warmly reciprocated.

Influx of Population.

The accession of population from the Old World through the coming season—particularly during the months of May, June and July—will undoubtedly surpass anything of the kind before witnessed in the United States. The Secretary of the Emigration Commissioners, at Castle Garden, places the total for the current year at not less than 500,000. The immigration is chiefly from Germany, where the stampede for America excites deep concern on the part of the government authorities, who are warmly advocating the imposition of a tax or some other measure that shall have a restrictive influence. The number of steerage passengers now arriving from German ports is unprecedented so early in the year. For example, the Servia, from Hamburg, on Monday landed at Castle Garden 1251 emigrants, and the Rotterdam, from Rotterdam, 398, while three English steamers which arrived at the same time brought 1210. We notice in the London *Times* by the last mail a column article relating to the movement of population from the United Kingdom, which now comprises a large proportion of well-to-do persons, representing the various trades as well as the agricultural classes, and it is observed that, taking the past year through, a decided preference is manifested for the United States as compared with the British colonies. The falling off in the number going to Australia is especially noteworthy. At one time, the editor confesses, some solicitude was felt as to whether the British Isles, with all their marvelous fecundity, could long endure such a drain on the brain and brawn of their comparatively narrow domain; but England, the writer would have us believe, is fully reconciled to the fact; indeed, the inference is justified that, on the whole, the riddance of a redundant population is a relief rather than otherwise.

The new impetus westward at the present time is attributed in no small degree to the extremely low rates recently offered to steerage passengers, as a result of the "railroad war" among our trunk lines, for the opportunity was eagerly availed of in New York by large numbers who purchased tickets to send over to their relatives abroad. The consequence to the steamship companies is that most of them are under contract for passenger transportation far in excess of their capacity, so that extra steamers, chartered for this purpose in some instances, will be put on during the hight of the season. Under these circumstances the German lines have agreed upon an advance, to take place immediately. Tickets from Bremen and Hamburg to be put at $24, and from Antwerp and Rotterdam at $20. They are under the necessity, however, of honoring the large number of prepaid tickets sold at a reduction, many of them as low as $15.

The Suez Canal and the Trade of British India.

The Secretary of British India has just published his statistical abstract relating to India's foreign trade during the fiscal year ended March 31, 1880—a valuable document, well deserving a close examination, inasmuch as it fully sets forth the importance of that country in a commercial and monetary sense. Since India has been provided with nearly 9000 miles of railroad and the Suez Canal has been opened, her domestic and foreign trade has developed at such an extraordinary rate, and English merchants, manufacturers and capitalists have been so much benefited by the growth of this greatest English possession across the seas, that England's material welfare is more than ever bound up with it, so much so that the solid interests expanding in those latitudes largely compensate for disappointments in other directions.

During the fiscal year under review, the proportion of India's foreign trade carried on through the Suez Canal, as compared with other routes (the Cape, &c.), has risen to 78 per cent., against 73 per cent. the previous year. The number of steamers arriving through and clearing for the canal was 1067 in 1879-80, against 941 in 1878-79, and from 1,426,957, in the latter year the tonnage rose to 1,603,769. While of late years the number of steamers through this route has varied comparatively little, their average tonnage has increased very materially, for from 1433 in 1875-76, it rose to 1507 in 1879-80. This goes to show that it pays better to send large steamers through the canal and pay the tolls thereon.

The government of India has been sensible enough to abolish gradually the export duties on products, and has shown therein more wisdom than Brazil, Cuba, and other countries exporting raw produce which has to compete abroad with similar products. Thus, since March last year, both indigo and shellac have ceased to pay an export duty, rice now remaining the only product besides opium which pays a tax on exportation.

The gross amount of import duties collected in 1879-80 was 39,760,000 rupees, against 39,600,000 the previous year. The bulk of import duties was collected on cotton goods and twist and on liquors; on the latter the duty paid shows a notable increase, on the former two a considerable decrease, due principally to the reduction of the duty on "grey goods" made from No. 30 twist and below.

Looking at India's trade from a provincial point of view, it is found that there has been an increase in the maritime provinces generally. Madras has recovered very much, but has not yet reached its maximum in 1875-76; what increase there has been is due to new railway lines on the coast on the one hand, and the requirements of the troops carrying on war in Afghanistan. Bombay has increased more in the importation of specie and less so by virtue of more goods imported and exported. The trade movement in Bengal has been highly satisfactory in every respect.

The total import in 1879-80 was £51,000,000, against £43,000,000 the previous year, and the export £59,000,000, against £64,000,000. This shows an increase in total foreign trade of about 12 per cent. in a single year, which is considerable. The fact is that the year 1877-78 found India glutted with all sorts of goods, and the famine was an impediment in the way of a ready sale, whereas in 1878-79 prosperity returned, and although food, &c., was still high in price, the purchasing capacity of the people at large had sufficiently recuperated to facilitate the gradual absorption of stocks. Several financially weak merchant firms and banks failed in 1877-78, and business in 1878-79 was therefore all the sounder. During seven months of 1878-79 hostilities in Afghanistan had been suspended, causing a good deal of money which would otherwise have been required in that direction to revert to commerce.

India's increased value of exportation has been almost exclusively due to the rise in cotton and opium. The tea trade was much depressed, the receipts of linseed were extremely light, and the Bengal Indigo crop the smallest for years; freights fluctuated a great deal; indeed, all circumstances militated against a large export, except the price of the two main articles above alluded to, which more than made up for shortcomings.

A most remarkable feature in 1879-80 was the extensive gold importation of £2,000,000, an increase of 30 per cent. as compared with the average of the preceding four years. There were exported of gold only £300,000. This large importation of gold is looked upon as a sign of prosperity, for the bulk of it is believed to be converted into jewelry. The net import of silver was £3,000,000, against £4,000,000 in 1877-'78.

The only thing which has been causing some restlessness in India since the troubles in Afghanistan commenced, is that the finances of the country have been getting worse.

Since the foregoing was written a cable dispatch has been received from Calcutta, dated March 25, reading as follows:

Major Baring's financial statement for 1879-80 shows a deficit of £1,183,000. But for the war expenditure there would have been a surplus of £4,607,000. The deficit for the year 1880-81 is estimated at £6,369,000. In this year £2,000,000 contributed by England is reckoned as revenue, while the expenditure includes £4,000,000, which, under the old system, would have appeared in the following year's estimate; also cost of frontier railways and £11,300,000 war expenses. The surplus for the year 1881-2 is estimated at £855,000. This estimate includes as revenue £3,000,000 contributed by England, and among the expenditures £3,000,000 for expenses of the war and frontier railways, and £1,500,000 on account of the famine insurance fund, of which one-half is for protective works and one-half for the reduction of the sterling debt. The opium revenue is estimated at £6,300,000. The intention is announced of remitting home during the year 1881-2 the sum of £17,250,000, and of raising an Indian loan of £3,000,000. The annual expenditure upon reproductive public works will be hereafter limited to £2,500,000.

With the enormous resources of a country rising so fast there is, indeed, not much difficulty to be apprehended in regard to the finances, so soon as the Afghanistan affair shall have been settled in a manner not involving further heavy expenditure, a solution which, from all appearances, is not distant.

A Trans-Continental Scheme.

A large party of capitalists are planning to make the port of San Diego, in Southern California, the terminus of the southern system of railroads, so as to open a new route across the Continent to the Atlantic coast. Intimately connected with this project is the San Diego Land and Iron Company, who have secured 40,000 acres of land, one-half of which goes to the railroad company. The latter have also obtained large grants of land at San Diego, comprising two valuable plats on the harbor front for terminal purposes. The object, it is stated, is to make San Diego, the only natural harbor on the Pacific coast south of San Francisco, from which it is distant about 500 miles, and whose advantages have long been recognized, the Pacific Ocean terminus for the southern system of trans-continental roads, affording a route between the two oceans some 400 miles shorter than by way of San Francisco. The improved harbor, moreover, is regarded as offering far greater facilities for the Southern Pacific commerce, being some 500 miles nearer to the principal shipping ports, while it commands equal advantages for China, Japan and the Sandwich Island trade. Until these remote connections shall have been established, the projectors of the enterprise look to the large local traffic which will spring up in the interior along the line of the road. The new line, starting from San Diego, takes a northeasterly direction, crossing some half dozen river valleys, among them those of the San Dieguito, San Luis Rey, Margerita and Santa Anna rivers, each of which is said to be capable of sustaining a large population engaged in orchard and vine culture, and for the establishment of which schemes are now contemplated and in progress.

The Southern Pacific will be crossed in the vicinity of Colton, and the connection with the Atlantic and Pacific will be made at some point between the Colorado and the Pacific. The harbor of San Diego is capacious, well sheltered, and vessels entering can carry 24 feet over the bar at low water. The leading spirit in these movements is said to be Mr. Thos. Nickerson, now president of the Atlantic and Pacific. Altogether the project of a new trans-continental route looks quite formidable, and San Francisco may find that she has a rival in the trade of the Pacific Ocean, but her citizens do not as yet betray any alarm.

The Course of Trade.

A few years ago the railroads monopolized so large a share of freight transportation that the natural water-courses, on which produce was borne to the sea, became almost deserted. But of late vigorous efforts are making by those interested in water transportation to recover the loss, and divert, so far as possible, the enormous traffic now controlled by the trunk lines of railway. New York merchants at last manifest symptoms of alarm, as was seen in the expressions of their meeting at the Produce Exchange last Monday. But there is not complete unanimity as to the chief source of danger; and some, it may be from motives of policy, disguise their real grounds of apprehension. Mr. A. R. Gray, who offered a set of resolutions in favor of free canals in this State, said: "Rival seaboard cities, by the lavish "use of capital, and by availing of all the "resources of engineering skill, have gone "far toward neutralizing the geographical "advantages of our State, and, toward "wresting from us the traffic in the product "of the great West. Canada, in the pursuance of an enlightened public policy, "and by vast expenditures, has nearly completed the improvement of the Welland "Canal, which will be ready for operation "in a few months; and last, though not "least, the Mississippi and New Orleans "route now looms up as one of our most "formidable competitors."

Here the speaker touches upon both points of danger, which others do not always see. It can hardly be said, however, that the leading railroad managers fail to take in the entire situation; for this year Commissioner Fink, the "pool plenipotentiary," announces a sweeping reduction in rates of freight from Chicago to the East, although the rates that prevailed this winter were 5 cents lower per 100 pounds than the highest rates that prevailed one year ago, as follows:

	Provisions	Grain
Buffalo and Suspension Bridge	20	17½
Albany, Troy, &c.	30	27
New York	35	32
Boston	40	35
Providence	45	40
Bridgeport and New Haven	40	35
Philadelphia	33	28
Baltimore	32	27
Washington	32	37

Remarking upon this reduction (which, however, occurs with the regularity of the seasons), the Chicago *Tribune* says the competition of Jay Gould's barge lines on the Mississippi has had much to do with keeping down rail rates this season, and that a great deal of business is being diverted by this means to New Orleans. We believe those overrate the importance of the Erie Canal, relatively, who ascribe the action of Commissioner Fink wholly to the expected opposition from this quarter. Merchants are only beginning to be aroused to a full apprehension of the situation. The railroads and canals can even afford to make common cause in a grand effort to retain the trade which now reaches the seaboard at New York. Mr. Gray, of the Produce Exchange, quoted above, recognizes the emergency, when he says: "It had been customary "in meetings held in the past to speak in "opposition to the railroads, but this talk "should now cease. The interests of the "railroads and of the canals are identical. "The one great question before them both "is, 'how can we retain the traffic of the "West—how can we increase it?'"

The argument in favor of free canals now comes home with redoubled force.

The public are promised almost immediately a full exposition of all that pertains to the trichinæ parasite from an authoritative source. Dr. Glazier has prepared a work on this subject, made up largely from French and German data, which is now going through the press. It is satisfactory to know that this investigation was instituted two years ago by the United States government, and was not prompted by the alarm recently sounded in Europe.

Colonel James, Postmaster-General, while in this city last week, expressed the intention of providing for at least ten deliveries daily in the "free-delivery system," instead of seven as at present, and this change will take effect in all the principal cities. He also contemplates the organization of a Post-office Savings Bank, based on the British system, the rate of interest to be so low as to avoid competition with other institutions.

A member of the Parliament at Ottawa, Mr. J. P. Wisner, who is now in this city, says the Canadians are much dissatisfied with the existing tariff, which imposes a duty of 40 to 50 per cent. on American manufactures, and that the vote of the farmers, who hold the balance of power,

will certainly overthrow the present government in the next election. This is a matter on which opinions differ widely.

Mr. Joseph Wharton, of Philadelphia, has led the way in a very important undertaking, which deserves the sympathy and encouragement of all those who have at heart the best interests of the country. He has founded the "Wharton School of Finance and Economy," as an adjunct to the University of Pennsylvania, by contributing $100,000 in 6 per cent. bonds. Mr. Wharton has strong convictions on the great questions of finance and political economy, which are such a fruitful subject of discussion, and his aim is to afford to able young men the opportunity to study them from a point of view which he believes is most likely to advance the prosperity of this country and insure the continued welfare of its manufacturing industries. Mr. Wharton, while leaving matters of detail to future organization, has broadly outlined the principles which are to guide the instructors in their work. In finance the doctrine that a hard money basis is the only sound and safe one is to be taught, while the value and necessity of a protective tariff in creating and fostering productive industries will be thoroughly discussed by the instructor on commerce and industry. The plan is comprehensive and appropriate in other respects also, and we trust that the movement will do much to advance a proper consideration of the great and fundamental principles of our present laws and strengthen the hands of its advocates.

At the present time, when the actual condition of the British iron trade is of the greatest interest, and its course in the near future is a subject of much anxious thought, not alone in England, but also in this country, full statistics of last year's production are of exceptional value. It has always been a source of regret that the official statistics of the British iron trade were collected so tardily that when they were made public much of their practical interest had been lost. Under the auspices of the British Iron Trade Association, their secretary, Mr. J. S. Jeans, has succeeded in effecting an important change. In his report for 1880, recently received, he has collected a mass of valuable data, from which we take the following for the present, leaving a more detailed discussion for the early future. The blast furnaces of Great Britain produced during the year 1880 as much as 7,721,833 gross tons of pig iron, against 6,009,434 tons the year previous. The enormous speculative demand created by our "boom" may be looked upon as justifying this unexampled expansion, but with a contraction of our requirements to present limits, and no prospect whatever of a renewal of our demand, a continuation of this rate of production is suicidal. It must prove of serious injury to British iron makers and is a continued threat to our own. The sooner this fact is fully realized, both abroad and in this country, the better for both. Though the Bessemer steel industry has witnessed an expansion almost equal to that of the pig iron manufacture, its position is at the present moment more favorable. The output of the British Bessemer works during the year 1880 almost equaled that of our own, the make having been 1,044,382 gross tons in 1880, against 834,511 in the preceding year. Of rails, 739,910 gross tons were turned out in 1880, against 519,718 tons in 1879, the figures indicating that a larger proportion of the make of ingot steel was used for that specialty than formerly.

Mr. Sydney G. Thomas, at the dinner tendered him in New York April 1, told a very good story which will bear repetition. His first and, at that time, his only visit to an American works was one made the day before to the steel works at Troy. Naturally Mr. Thomas was much interested at what he saw there of the American Bessemer practice, and found much occasion to regret that his visit was so brief. When the time came to leave he remarked to Mr. A. L. Holley that he would like nothing better than to sit down on an ingot mould and watch the working of the mill for a week, to which Mr. Holley replied that if he wanted an ingot mould cool enough to sit on he would have to send to England for it. Mr. Thomas thought this very cruel satire, and professed himself quite unable to understand why his repetition of the conversation was received with hilarity, instead of with expressions of sympathy.

A lamentable sequence to the Chili-Peruvian war is the destruction of sugar-houses, machinery, &c., in the fertile valleys lying back of the Peruvian coast. The miscreants thus engaged are practical Nihilists, who are not actuated merely by a desire for plunder, but seek to exterminate life and reduce the country to a wilderness. Some 2000 Chinamen, slaughtered in cold blood, are among their victims. The losses already amount to millions of dollars.

A fleet of French gunboats is under construction in San Francisco for service at the Tahiti station, and the first was launched a few days ago in the presence of the French consul. She is called the Nukahiva, measures 64 feet on the keel and will register 75 tons. Her armament will be put on board at Tahiti. A second steamer will be launched on the 20th inst.

The World's Fair Commission have decided that if they do not get $3,000,000 by April 15th they will need no president, which reduces the subject to a very simple question.

The Determination of Manganese in Steel.

To the Editor of The Iron Age.—DEAR SIR: I have read the various letters in *The Iron Age* on "chemists" and the "value of chemical analysis" with much care, and as a "chemist" and a "specialist" I am particularly interested in the views of the metallurgists. If these gentlemen, from want of practice (for, if not so now, they have been analysts), can no longer make an exact chemical analysis, they can certainly appreciate the value of one when they get it, and put it to its best use when they know it. If it is to the advantage of the metallurgist to get accurate results, it is equally to the advantage of the chemist to furnish him with them; and if this be so, whose fault is it that so many misleading analyses bring discredit to the one and loss to the other? The individual fault is that of the chemist; the general cause lies with the metallurgist. So long as the latter considers that little preparation and less knowledge are required to make a chemist, so long will he have a large percentage of inaccurate results; for the rewards offered to a man to remain a chemist being low, the best men will leave chemistry and seek some field where skill and intelligence are better rewarded and more highly appreciated. The length of time required to make a good chemist depends more on the man than on either his opportunities or his experience; but I think I may venture to assert that no man who does not understand theoretical chemistry, who does not know the reason for anything that he does and is not familiar with the chemical reactions at every stage of a method, can be a good and accurate analyst. His work may go smoothly for a time, but the first unexpected thing will upset him, and his employer will as certainly pay for his experience as if he paid a higher salary for a better man. Besides skill and knowledge, I know of no profession which requires more fidelity and conscientiousness than analytical chemistry, and if these qualities, joined to intelligence, skill, knowledge and aptitude, cannot find an adequate reward in the laboratory they will seek and find it elsewhere, and the metallurgist will get what he pays for, and that will not be accurate chemical analysis. If, on the one hand, "works'" chemists are poorly paid, commercial chemists are equally so, and a man's reputation as a skilled and honest analyst goes for little with most men against a lower charge from a little known or untried competitor.

However, I wish to say a few words on the special subject of manganese. In Mr. Kent's letter, which I have read with great pleasure, I find that he seems to consider borings taken at different times from the same plate, or even from the same heat, as constituting part of the same sample. I cannot agree with him in this respect, for I have frequently found very appreciable differences as regards the percentage of manganese in different parts of the same bar or plate, and I think that, in fairness to the chemists, they should have had portions from the same lot of well-mixed drillings. I do not, of course, believe that the larger differences shown there can be due to want of homogeneity in the samples, but I think it highly probable that some of the smaller may be, and I regret extremely that any doubt can thus be thrown on the experiment.

It is only fair to the chemists that they should have proper samples to work on, and too much care cannot be taken to insure absolute identity and uniformity in such samples as may be used to check a chemist's work, either by his own results or those of some one else.

The following analyses, made on samples taken from the opposite ends of bars of Bessemer steel 6 feet long, will illustrate my meaning. The determinations were made by myself with the utmost care. They were checked in many cases by duplicate determinations, made after a lapse of some time. These latter were found to agree within a few thousandths of 1 per cent. with the former results:

PER CENT. OF MANGANESE.

No. of bar.	End A.	End B.
7	0.213	0.217
8	0.245	0.214
9	0.252	0.221
10	0.269	0.228
11	0.282	0.228
12	0.262	0.238
13	0.103	0.101

The phosphorus and the carbon in the two ends never varied more than four or five thousandths of one per cent.

There are several sources of error in the methods ordinarily used for the estimation of manganese, which is at best a very troublesome and difficult element to determine. The first of these is in weighing the precipitate of Mn_3O_4, which is liable to contain not only Fe_2O_3, but also Na Cl if sodic carbonate and acetate is used to separate the iron and manganese.

The second is, when the bromine precipitate of manganic oxide is redissolved and the manganese precipitated as ammonic manganic phosphate, for unless the manganic oxide is carefully separated from a little ferric oxide that will nearly always be found with it, this will vitiate the result by a varying and unknown quantity. The first source of error can best be avoided by not using the method of weighing as Mn_3O_4 at all, but redissolving the manganic oxide and determining it as phosphate. The second, by treating the manganic oxide with H Cl diluted with an aqueous solution of SO_2, which causes its very rapid solution. After evaporating the solution nearly to dryness and oxidizing any iron which may be present by a drop or two of bromine water and boiling off all excess of bromine, the Fe_2O_3 may be precipitated by ammonia, nearly all smell of the latter boiled off, the solution filtered and the operation repeated several times to get every trace of manganese out of the Fe_2O_3. The filtrates should be evaporated to small bulk after adding solution of microcosmic salt and slightly acidulating the solution, and the manganese precipitated by ammonia as ammonic manganic phosphate. When this has become crystalline the solution should be allowed to stand until perfectly cold, and then filtered and washed with cold water. This is troublesome and takes time, but it is accurate. The curse of this age is its hurry; everything must be done rapidly, and if a driven "iron chemist," or a starving commercial "specialist," takes short cuts across a method and his employer's interests, he is more sinned against than sinning.

I have tried Mr. Ford's method, and, so far, have found it very accurate if the last traces of Fe_2O_3 be carefully separated. If the tests to which I am now having it subjected are satisfactory, I shall certainly adopt it. Mr. Ford, by the way, owes his method to Mr. J. B. Hanney, F. R. S. E., whose admirable little paper on a "New Manganese Reaction," *Journal of the Chemical Society*, vol. xxxiii, p. 269 (Transactions 1878), will well repay perusal. He shows that the Fe_2O_3, carried down with the manganic oxide in a strong nitric acid solution, is due to the formation of a double manganate of iron and manganese, and not to mechanical action. He, curiously enough, attempts to use the reaction as a means of separating iron and alumina, but never thinks of applying it to the separation of small amounts of manganese from large amounts of iron. Thanks to Mr. Ford, it bids fair to aid the "iron chemists" to shorten a very long process: and, if they will only be content to put on one end a part of what they are able to take off the other, it may give Mr. Kent a portion of his desire—correct percentages of manganese in his steel.

Yours truly, ANDREW A. BLAIR.
NEWPORT, R. I., March 28, 1881.

Specialists and Generalists.

To the Editor of The Iron Age.—DEAR SIR: Your very flattering invitation, to have me publish my methods of steel analyses in your valuable paper, was received this morning. I regret very much that I am compelled to decline, because of a very serious trouble with my eyes, which forbids their use in either writing or reading. I would say, in regard to the analyses of steel, that there are a number of methods of equal efficacy if intelligently executed. But I would not prescribe any special method for particular individuals. There should not be such large discrepances as your correspondent Mr. Kent describes, whatever the methods, as many roads lead to Rome. I have had occasion to have analyses made of the same substance by a number of good chemists, and always with, practically, the same results—and I feel positive that no two of their methods were strictly alike, and some were radically different. I entirely disagree with Mr. Kent's idea that chemists should be merely mechanical imitators of others. I would offset his illustration of a bookkeeper, by saying that one would not apply to a lawyer's copyist to develop an intricate lawsuit, or to a compositor setting Greek for commentaries on the classics. I don't mean to say that there are not ignorant chemists whose experience has made them accurate in one particular branch; but I hold, with Prof. Wurtz, that a specialist should be a generalist. For my part, I have never regretted the time that I gave to organic chemistry, although I have never utilized it in my subsequent experience. I think it is very easy for clear-headed business men to distinguish between good and bad chemists; for, fortunately, their blunders are not buried like those of doctors.

Thanking you very heartily for your courteous letter, I am, very respectfully, yours, A. WENDEL.
TROY, N. Y., March 31, 1881.

Protection Practically Considered.

ROCKFORD, ILLINOIS, March 20, 1881.

To the Editor of The Iron Age.—DEAR SIR: I think you will agree with me that the only principle involved in the doctrine of "Protection," or a protective tariff, is simply that of self-preservation. In the United States protection is the better, as it gives "the greatest good to the greatest numbers." The same rule applies to France, while in England it is quite another thing. There, on account of certain conditions of things, free trade gives her people "the greatest good to the greatest numbers." This rule of protection can as properly be applied to contiguous nationalities, where the existing conditions admit of it, as to countries under one government. The German Zollverein, or Protective League, adopted by the several governments which now make up the German Empire some years since, is a case in point, where the benefits resulting to their people are so well recollected that it is unnecessary to repeat them.

Where the products of two or more countries lying contiguous are required by each other, and, from natural causes or otherwise, the one cannot produce what the other does, and *vice versa*, an absolutely free interchange of commodities will give "the greatest good to the greatest number." Where such conditions exist, and a commercial arrangement can be made to permit of such free interchange, it would seem eminently wise and proper to do it.

It occurs to me that the foregoing suggestions will apply most advantageously to the United States and Mexico. Their territories lie contiguous to each other, being separated by an imaginary line only, nearly 3000 miles long. The natural products of Mexico, with the exception of that part of the United States which immediately adjoins it, are entirely different from those of this country, and with scarcely an exception are all eagerly sought after and used by our people.

Under the wise and liberal policy recently adopted by Mexico of inviting capital, skill and energy to extend our system of railroads into that country, those products will be largely increased. It is not necessary to enumerate them here, for they are quite well understood by every one who has given the subject even a superficial examination. That an export traffic from Mexico to this country of one or two hundred millions annually, would in a short time grow up under the arrangement above indicated, I have no doubt.

Mexico is not a manufacturing country, and with the want of education and general intelligence among the masses of her people, it will require a long series of years with them, as it has with us, to reach a state of efficiency in that line sufficient to supply their requirements; consequently, there can be no doubt a very large market for the thousand and one varieties of manufactured articles produced in this country would be opened by such an interchange of traffic.

As regard the details of carrying out these suggestions between the two countries, it occurs to me it would be quite feasible, after the adoption of the principle should be agreed upon. Something like this, it appears to me, might be done by treaty:

1. Let the two countries levy a uniform rate of duties on all imports from other countries.

2. Abolish all custom houses on the dividing line between the two countries, thus making the interchange of all commodities between them absolutely free.

3. In order to prevent unfairness in the collection of such duties, let each government place its own representative at every port in both countries where duties are to be collected, for the purpose of seeing that the law or treaty is strictly adhered to.

This, of course, would involve some expense, but there is no doubt the benefits that would arise would so far outweigh it that it would not be worth mentioning. I am well aware this is a subject of very large proportions, yet I am so fully impressed with its importance that I think it well deserves the careful attention of those in authority in both countries. Very truly yours, &c.,
AN ILLINOIS FARMER.

NEW PUBLICATIONS.

A SYSTEM OF INSTRUCTION IN QUANTITATIVE CHEMICAL ANALYSIS. By Dr. C. Remigius Fresenius. Edited by C. D. Allen, Ph. D., and Samuel W. Johnson, M. A., of the Sheffield Scientific School. Published by Messrs. Wiley & Sons, New York.

Fresenius' text-books on analytical chemistry are so well and so generally known, as there is hardly a laboratory in Europe or in this country where they are not constantly referred to, that it is quite unnecessary to speak of their merits in general. The appearance of the second American edition will, therefore, be hailed with satisfaction by the majority of chemists, as the last one is as old as 1869. Profs. Allen and Johnson, in bringing out the new one, have taken an important step by abandoning the old nomenclature and adopting the new. This will no doubt be generally approved as judicious and timely. The rising generation of chemists, for whom the work is primarily intended, are not as familiar with the old nomenclature as those who have been taught under it, and who have long accepted and adopted the new one. The change will, therefore, be probably welcome to all. In preparing this new edition, the editors have largely followed the last German and English editions, but they have in some instances omitted portions, while in others they have amplified or added matter of their own. The general plan, of course, remains the same, and the methods of determination and separation are altered only in detail. It is in the special part that the editors possessed and have exercised their functions, and it is particularly with reference to metallurgical chemistry that the work has been elaborated. Special, though brief, chapters have been prepared on the assay of copper, lead, nickel and cobalt ores and products, and many pages have been devoted to the analysis of iron ores, pig and steel. They do not, of course, go into details so minutely as the papers and essays on the determination of carbon, phosphorus, sulphur, &c., of which current metallurgical literature can boast of such numbers, yet to many they will prove valuable and suggestive.

FIELD ENGINEERING. By William H. Searles, C. E. Published by Messrs. Wiley & Sons, New York.

With a view to presenting to engineers, as well as to beginners, a ready book for reference, and at the same time offer a manual for guidance in organizing and carrying out work in the field, Mr. Searles has, in a compendious form, placed before the profession the hand-book before us. It is divided almost equally into two parts, the first of which is a brief treatise on field engineering, while the second is a collection of tables, which are an indispensable companion of every engineer. Mr. Searles treats quite elaborately such topics as the maximum economy in grades, simple and compound curves and turnouts, discussing them in such a way that an elementary knowledge of algebra and trigonometry is all that is required. By numerous examples, the beginner is aided at every step. His chapters on construction and the calculation of earthwork will be very welcome to many. Naturally, the bulk of the work is a compilation, the main value of which lies in the convenience of arrangement and the clearness with which it is presented, so as to be accessible without tedious search and readily comprehended even by those of the profession whose school knowledge has become rusty. In both respects Mr. Searles appears to have been successful. He has, besides, introduced new problems suggested by practical experience, and has added to the usual tables given in every work of this class a number of new ones which will meet with appreciation.

In connection with recent publications relative to an alleged undervaluation of iron imported into Canada by the firm of Clarke, Reeves & Co., we are authorized to state that the merchant appraisers at Ottawa, to whom the question was referred, disagreed in their conclusions. One of them, Mr. John Taylor, of Montreal, a business man of high repute, and agent in Canada of the Edge Moor Iron Co., in a well-digested report, fully sustained the rate at which the iron had been entered. The other appraiser, a Mr. Fleck, recommended an increase in the valuation. The arbiter, under the Canadian Statute, in such cases was the Collector of Customs, who receives a percentage of the amount of any penalty exacted, as the result of an additonal duty imposed. His report coincided with that of Mr. Fleck. (It is a significant circumstance, in this connection, that within a week after public notice of the action of this officer, the Dominion Parliament repealed the provision above mentioned.) From the decision of a tribunal thus constituted, Clarke, Reeves & Co. have appealed to the Treasury Board, a council composed of the Ministers of Customs, Justice, Finance and Inland Revenue, where, it is safe to assume, their case will receive a fair and impartial consideration. The evidence upon which the adverse decision is claimed to have been based, and which will now be subjected to a quasi-judicial scrutiny, has been examined by eminent counsel, who have advised the firm that it fully sustains the valuation at which they entered the iron for duty.

The Dinner to Sydney Gilchrist Thomas.

On Friday evening, April 1st, Mr. Sydney Gilchrist Thomas was the guest of his American friends at a dinner served at Delmonico's. The party assembled at 6-30 p. m., and after half an hour of delightful social intercourse were ushered into the dining room and took their seats at a very elegantly furnished table. Mr. A. S. Hewitt presided, Mr. Thomas sitting at his right and Mr. Jas. A. Burden at his left. The other gentlemen present were: Mr. Eckley B. Coxe, Dr. Thos. M. Drown, Mr. John Bogart, Mr. J. C. Bayles, Mr. Thomson, Mr. Newton, Mr. Frost, Prof. R. H. Thurston, Mr. B. G. Clarke, Mr. Toucey, Mr. Chas. McDonald, Mr. John Fritz, Mr. W. G. Hamilton, Mr. W. B. Crocker, Mr. A. Carnegie, Mr. Brendlinger, Prof. Geo. W. Maynard, Mr. Bunker, Mr. A. L. Holley, Mr. Lenox Smith, Mr. Cyrus Butler, Mr. L. G. Lawrence, Mr. L. B. Moore, Mr. M. N. Forney, Mr. R. Hunt, Mr. D. S. Hines, Mr. E. D. Leavitt, Mr. I. Chanute, Mr. Edward Cooper, Mr. D. Van Nostrand, Dr. R. W. Raymond, Mr. A. W. Humphreys, Mr. S. W. Baldwin, Mr. H. Kobbe, Mr. G. A. Crocker, Mr. Chester Griswold, Mr. R. L. Fowler and Dr. C. F. Chandler.

With the cigars and candles began what, since the Philadelphia dinner of the Institute of Mining Engineers, has been known as the "afterblow." Mr. Hewitt called the company to order and delivered a very entertaining speech, full of fun and bristling with points. Notwithstanding the whiteness of his hair and beard, giving him a venerable appearance, Mr. Hewitt delights to play the boy, and sparkles on such occasions as this with what has been called the "corruscations of juvenility." He introduced Mr. Thomas, who spoke long and well—better, if we may say it, than was expected by those who know his diffidence and modesty. He acknowledged the honor conferred upon him in being the guest of such a company, generously claimed for others a share of the credit which had been awarded him, and indulged in much pleasant humor, which was greatly enjoyed. Mr. Edward Cooper responded to the toast of "The City of New York"; Mr. Andrew Carnegie, "The Great West"; Dr. C. F. Chandler, "The School of Mines"; Prof. R. H. Thurston, "The American Society of Mechanical Engineers"; Prof. G. W. Maynard, "The Birthday of the Basic Process"; Mr. John Bogart, "The Civil Engineers"; Mr. J. C. Bayles, "The Technical Press"; Dr. R. W. Raymond, "The American Institute of Mining Engineers." The dinner and "afterblow" lasted until midnight, and were greatly enjoyed by those who participated.

Corporate Power in New Jersey.—The Anti-Monopoly League, of Jersey City, have taken bold ground against the alleged encroachments of corporations. They declare that the railroads have literally taken possession of the municipality, and are to-day occupying city real estate to the amount of $60,000,000, upon which they do not pay a cent of tax, at the same time that they have the full benefit of the fire, police and water departments, which are maintained by the citizens at a heavy annual cost. As a consequence of this state of things they further say the municipality is on the verge of actual bankruptcy; that real estate is rapidly depreciating, at a time when in other communities it is steadily advancing; that people who have property are selling it for what they can get for it, in order to leave the place altogether, and, last but not least, all attempts heretofore to compel these great corporations to assume their fair share of the public burdens has been defeated by their paid agents in the Legislature. What they propose, now, is to organize a taxpayers' party, outside of the political organizations, and to keep up a persistent agitation until justice is obtained. The League includes most of the prominent citizens of the place, and not a few of them are men of wealth and position. The railroad people, in defense, say that the rapidly extending business of the great corporations, in the course of a few years, will absorb the whole of Jersey City, which is wanted for storehouses, elevators, repair shops, depots, trackage, &c., and that it would be unjust to compel them to pay taxes now for property which they will be compelled to purchase at a heavy outlay by-and-by. The roads which thus intersect the city are the Jersey Central, Pennsylvania, Erie, Greenwood Lake, Delaware, Lackawanna and Western, Morris and Essex and Northern.

The Brooklyn Rapid Transit Commissioners have decided to construct an elevated railroad from the Brooklyn end of the bridge to the Long Island Railroad depot at Atlantic avenue, and to construct from there to East New York a surface road.

Hardware and machinery from the United States are well represented at the Matanzas Exhibition, which opened on the 3d inst. These constitute the principal features in the exhibits sent from this country.

The action of William S. Williams to prevent telegraph consolidation is set down by Judge Speir, of the Superior Court, for the 18th inst.

Cutlery.

FRIEDMANN & LAUTERJUNG,

Manufacturers of

PEN AND POCKET CUTLERY,

Solid Steel Scissors, Shears, Razors, &c.

Sole proprietors of the renowned full concave

"ELECTRIC RAZORS,"

And the celebrated **"ELECTRIC SHEARS."** Nickel Plated Bows.

Agents for the BENGALL RAZORS.

AMERICAN TABLE CUTLERY, BUTCHER KNIVES, &c.

91 Chambers and 73 Reade Sts., N. Y. 423 N. Fifth St., ST. LOUIS, MO

THE

LAMSON & GOODNOW MFG. CO.,

Salesroom and Warehouse, 88 Chambers Street, New York City.

Factories, Shelburne Falls, Mass.

Superior Cutlery of all kinds and grades, from the finest in pearl and ivory handles to the lowest price in wood and iron handles.

OUR

BUTCHERS' and HUNTERS' KNIVES

Are warranted to be equal in style, finish and quality, to any goods made in the world.

"COMPARE, THEN JUDGE."

We are the sole owners of the *Gardner Patent Guard and Rest for Carving Forks*, and the manufacture of fine carvers is with us a specialty.

AARON BURKINSHAW, Pepperell, Mass.,

Manufacturer of

PRUNING, BUDDING AND POCKET KNIVES

OF EVERY DESCRIPTION.

My Blades are forged by hand from the best cast steel and warranted. Established 1853.

JOHN WILSON'S CELEBRATED

TRADE MARK.

"FOUR PEPPERCORNS AND A DIAMOND."

GRANTED A D 1766 BY THE CORPORATION OF CUTLERS OF SHEFFIELD AND PROTECTED BY ACT OF PARLIAMENT.

REGISTERED ALSO AT WASHINGTON U.S.A. ACCORDING TO ACT OF CONGRESS.

ALSO AT LEIPZIC, IN ACCORDANCE WITH THE GERMAN TRADE MARKS' REGISTRATION ACT.

BUTCHERS' KNIVES, BUTCHERS' STEELS, AND SHOE KNIVES.

It having come to the knowledge of JOHN WILSON that Counterfeit Butchers' Knives, purporting to be of his manufacture, are being sold in the United States, he hereby cautions all purchasers of his Knives and Steels to be on the alert against such imposition.

JOHN WILSON also hereby gives Notice, that it is his determination to institute Legal Proceedings against any person or persons who may be detected infringing his Trade Mark.

Every article of JOHN WILSON'S manufacture, bears the Trade Mark, in addition to the Name.

WORKS:—SYCAMORE ST., SHEFFIELD, ENGLAND. Established 1750.

SEYMOUR'S

Diamond Edge Solid Cast Steel

SHEEP SHEARS.

GREAT TRIUMPH OF AMERICAN INDUSTRY.

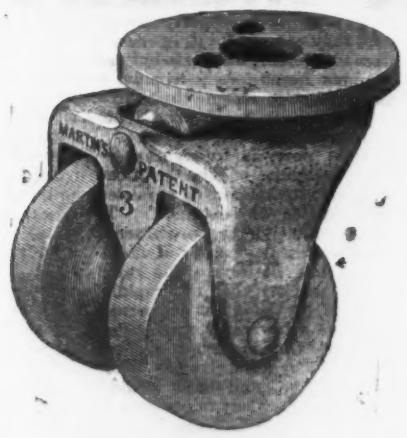
Every Pair Warranted Superior to Imported. Price lists sent on application.

HENRY SEYMOUR CUTLERY CO., Holyoke, Mass.

Office of

PHŒNIX CASTER CO.,

Indianapolis, Ind.



George A. Ruhleman & Co., St. Louis, Mo., have sold our Casters as follows:

1878	Amount,	$14.55
1879	"	246.76
1880	"	710.53

Our Caster is no experiment. The people will have it, if it does cost more than the shams on the market. Eight-inch Mill Files are no better stock. Introduce yourself to these goods by a very small stock order of our selection. Terms, 60 days. Ship them back if they fail in your esteem. Send for catalogue.

PHŒNIX CASTER CO.,

Manufacturers,

INDIANAPOLIS, IND.

Our Drawer is so uniform, simple, strong and effective, that it has nearly driven all competition from the field.

St. Louis, March 12, 1881.
Please send us 300 Daisy Stove Trucks.
EXCELSIOR MFG. CO.

TUCKER & DORSEY, MANUFACTURERS. INDIANAPOLIS, IND.

The Northup Window Spring

Holds top or bottom Sash firmly at any hight; locks them when closed. Where introduced the Hardware trade find a steady demand for it. Samples, in neatly-made working models for counter exhibition, sent free by

THE SECURITY BLIND FAST CO., 19 Calender St., Providence, R. I.

(See New York Wholesale Prices in *The Iron Age.*)

Cutlery.

ALFRED H. HILDICK,

12 Warren St., N. Y.,

Importer of **CHAINS, ANVILS, VISES, &c.**

Agency of

HILL BROTHERS & CO., WALSALL, ENGLAND

GENERAL HARDWARE MERCHANTS,

And of

BALL'S PAT. SOLID STEEL SHEEP SHEARS.

These shears are unsurpassed for cheapness, durability and utility. They are made of one solid piece of steel from point to point, and cannot be broken in use either in the bow or at the junction of the shank and blade. Samples can be seen at above address, or sample lots furnished.

CORPORATE MARK.

Joseph Rodgers & Sons'

(LIMITED)

CELEBRATED CUTLERY,

No. 82 Chambers Street, New York.

F. & W. CLATWORTHY, Agents.

The demand for **Joseph Rodgers & Sons'** productions having considerably increased, they have, in order to meet it, greatly extended their Manufacturing Premises and Steam power.

To distinguish Articles of **Joseph Rodgers & Sons'** Manufacture, please to see that they bear their Corporate Mark.

P. O. Box 3062.

ESTABLISHED 1836.

Alfred Field & Co.,

COMMISSION MERCHANTS,

New York, Birmingham, Sheffield, Liverpool.

Guns and Pocket Cutlery.

SPECIALTIES.

Headquarters for

ELEYS BROS.' GOODS, WRIGHT'S ANVILS,
WILSON'S BUTCHER KNIVES, &c.
WOSTENHOLM'S POCKET CUTLERY AND RAZORS
FIELD, FRASER & CONTINENTAL POCKET KNIVES,
BUTCHER'S FILES, TOOLS AND RAZORS,
JOSEPH ELLIOTT'S CELEBRATED RAZORS,
WESTERN FILE CO.'S FILES,
ENGLISH AND GERMAN GUNS,
ROBERT SORBY & SONS' SHEEP SHEARS,
STURS' FILES, WESTERN FILES,
GREAVES' SHEEP SHEARS,
CHESTERMAN'S TAPES,
GERMAN COIL AND HALTERS and other CHAINS,
BRADES' TROWELS AND HOES,
CANASTOTA KNIFE CO.'S POCKET KNIVES,
Etc., Etc., Etc., Etc.

All sorts of Hardware and Merchandise for import and export purchased on commission.

ROBERT SORBY & SONS,

SHEFFIELD,

MANUFACTURERS OF THE CELEBRATED

Kangaroo Sheep Shears,

The best Shears made.

CORPORATE MARK.

Every Shears Guaranteed.

ALFRED FIELD & CO.,

93 Chambers St., - NEW YORK,

SOLE AGENTS.

Send for price list and terms.

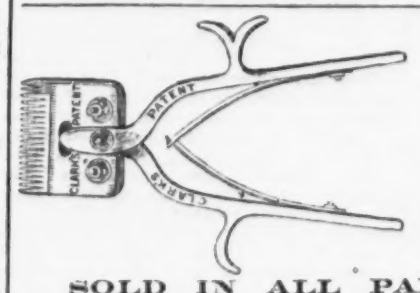
FURNESS, BANNISTER & CO.,

NEWARK, N. J.

Manufacturers of

TABLE CUTLERY.

PRICES FURNISHED ON APPLICATION.



W. CLARK'S

Patent English Clipper

No. 2.

for *Heads* and *Barbers' Use.* Has been before the public for many years, giving *universal satisfaction.*

Warranted to Give a Clean Cut.

SOLD IN ALL PARTS OF AMERICA.

W. CLARK'S

Patent English Clipper,

No. 1.

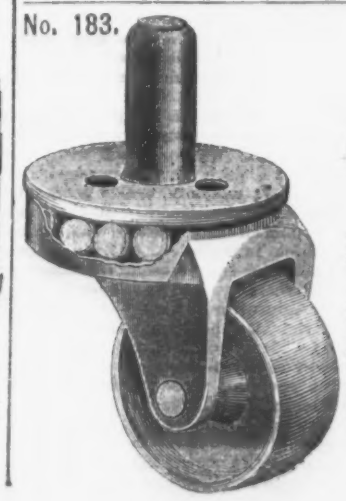
This Machine has been so extensively used by the public for nearly *12 years* that comment is unnecessary.

ORIGINAL.

W. CLARK, 232 Oxford Street, London.

AGENTS WANTED.

No. 183.



PAYSON'S

Patent "Anti-Friction"

Caster.

Can Never Wear Out or Fail to Act.

SENSITIVE, COMPACT AND HANDSOME.

Has plates riveted firmly together, with opening for screw driver. Works upon iron disks or rollers concealed from view, which relieve all friction and strain upon the stem, by placing the weight directly over the main wheel. No oil used on rollers. Made in all sizes and styles by

PAYSON MANUFACTURING CO.,

CHICAGO, ILL.

Boston Agent, A. T. YOUNG, 36 Pearl St.

Cutlery.

French Clippers

PEUGEOT FRERES.

Barber's Clipper.

We are sole agents for these Clippers. All orders should be addressed to us to obtain lowest prices.

McCOY & SANDERS,

132 Duane St., New York.

Horse Clipper.

Silver Medal, 1878—Paris.

JOHN SPENCER & SON,

Albion Steel Works, Sheffield,

MANUFACTURERS OF

FILES

AND

STEEL,

Table Knives, Razors, Shovels, &c., &c., of every description.

CORPORATE MARK.

SPENCER SHEFFIELD

Granted 1749.

B. WORTH,

RAZOR MANUFACTURER,

Sheffield, England.

FULL CONCAVE RAZORS A SPECIALTY.

Cheapest House in the Trade.

Price lists mailed free on application.

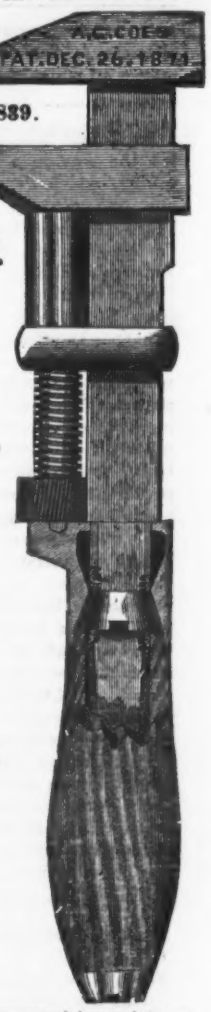
LAMONT'S

PATENT

COMBINATION RAZOR STROP,

Manufactured by **COPELAND, HALL & Co.** *Rochester, N. Y.*

Coulter, Flagler & Co., Sole New York City Agents.



Established in 1839.

A. G. COES & CO.

WORCESTER,

MASS.,

Successors to

L. & A. G. Coes,

Manufacturers of

THE GENUINE

COES

Screw Wrenches.

PATENTED,

May 9, 1871.
December 26, 1871.
December 26, 1875.
August 1, 1876.

The backstrain when the wrench is used is borne by the bar—not by the handle.

The strongest Wrench made and the only successful Re-enforced Bar.

None genuine unless stamped

A. G. COES & CO.,

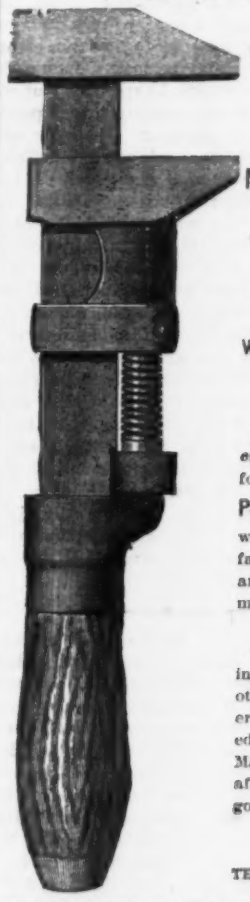
Our Agents, GRAHAM & HAINES, 113 Chambers St., New York, carry a full line of our goods, and will be pleased to serve you at factory prices.

TRADE MARK.

STANDARD GIRARD WRENCH.

MARK.

WARRANTED.



FOR **STRENGTH** AND **Durability** IT HAS

NO SUPERIOR,

GUARANTEED, IN EVERY RESPECT.

Wrought Bar, Head and Screw.

Owing to the *increased demand* for these justly **Popular Wrenches,** we are now manufacturing more than any other establishment in the world

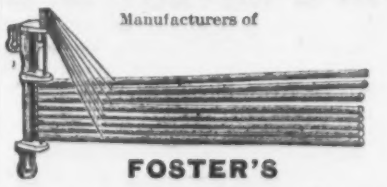
Our Wrench having been imitated by other manufacturers, we have adopted the above Trade Mark, and will hereafter stamp all our goods.

SEND FOR TERMS and PRICES

GIRARD WRENCH MFG. CO., Girard, Pa.

C. A. FOSTER & CO.,

Manufacturers of



FOSTER'S

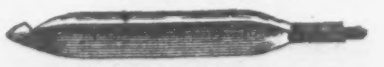
Improved Clothes Dryer.

Acknowledged by dealers to be the best and cheapest in market.

Fitchburg, Mass., U. S. A.

CHAS. E. LITTLE,

59 Fulton St., N. Y.



Solid Cast-Steel Pump Augers

For Boring Pump Logs and Pump Tubing, with all necessary fittings. Agency for **Barnes' Wood-Working Machinery and Lathes.**

The Standard Oil Company.

Mr. H. D. Lloyd, in a paper contributed to the *Atlantic Monthly*, says:

Very few of the 40,000,000 of people in the United States who burn kerosene know that its production, manufacture and export, its price at home and abroad, has been controlled for years by a single corporation—the Standard Oil Company. This company began in a partnership, in the early years of the civil war, between Samuel Andrews and John Rockefeller. Rockefeller had been a bookkeeper in some interior town in Ohio, and had afterward made a few thousand dollars by keeping a flour store in Cleveland. Andrews had been a day laborer in refineries, and so poor that his wife took in sewing. He found a way of refining by which more kerosene could be got out of a barrel of petroleum than by any other method, and set up for himself a ten-barrel still in Cleveland, by which he cleared $500 in six months. Andrews' still and Rockefeller's savings have grown into the Standard Oil Company. It has a capital, nominally $3,500,000, but really much more, on which it divides among its stockholders every year millions of dollars of profits. It has refineries at Cleveland, Baltimore and New York. Its own acid works, glue factories, hardware stores, and barrel shops supply it with all the accessories it needs in its business. It has bought land at Indianapolis on which to erect the largest barrel factory in the country. It has drawn its check for $1,000,000 to suppress a rival. It buys 30,000 to 40,000 barrels of crude oil a day, at a price fixed by itself, and makes special contracts with the railroads for the transportation of 13,000,000 to 14,000,000 barrels of oil a year. The four quarters of the globe are partitioned among the members of the Standard combinations. One has the control of the China trade; another that of some country of Europe; another that of the United States. In New York, you cannot buy oil for East Indian export from the house that has been given the European trade; reciprocally, the East Indian house is not allowed to sell for export to Europe. The Standard produces only one-fiftieth or sixtieth of our petroleum, but dictates the price of all, and refines nine-tenths. Circulars are issued at intervals by which the price of oil is fixed for all cities of the country, except New York, where a little competition survives. Such is the indifference of the Standard Oil Company to railroad charges that the price is made the same for points so far apart as Terra Haute, Chicago and Keokuk. There is not to-day a merchant in Chicago, or in any other city in the New England, Western or Southern States, dealing in kerosene, whose prices are not fixed for him by the Standard. But in all cases these prices are graded so that a merchant in one city cannot export to another. Chicago, Cincinnati or Cleveland is not allowed to supply the tributary towns. That is done by the Standard itself, which runs oil in its own tank cars to all the principal points of distribution. This corporation has driven into bankruptcy, or out of business, or into union with itself, all the petroleum refineries of the country except five in New York, and a few of little consequence in Western Pennsylvania. Nobody knows how many millions Rockefeller is worth. Current gossip among his business acquaintance in Cleveland puts his income last year at a figure second only, if second at all, to that of Vanderbilt. His partner, Samuel Andrews, the poor English day laborer, retired years ago with millions. Just who the Standard Oil Company are, exactly what their capital is, and what are their relations to the railroads, nobody knows except in part. Their officers refused to testify before the Supreme Court of Pennsylvania, the late New York Railroad Investigating Committee, and a committee of Congress. The New York committee found there was nothing to be learned from them, and was compelled to confess its inability to ascertain as much as it desired to know "of this mysterious organization, whose business and transactions are of such a character that its members declined giving a history or description lest their testimony be used to convict them of crime."—*H. D. Lloyd, in March Atlantic.*

Proposed Iron Works in British Colombia.

The Victoria (B. C.) *Standard* says: The smelting works erected at Irondale, near Port Townsend, for the purpose of testing the practicability of making good iron from the bog iron ore of Puget Sound, combined with the magnetic ore of Texada Island, are now in operation, and the result of the first workings is very favorably reported on by a Puget Sound paper. The furnace is only on a small scale, the cost of the whole works, including every outlay connected with them, having amounted to only $36,000. The result is, however, satisfactory, and fully justifies the expectations of the projectors. The iron produced is of good quality, and fit for all ordinary purposes. According to the report in the Seattle *Post* the proportions of ore used are 80 per cent. of bog iron and 20 per cent. of Texado ore; but from the well known intractability of bog ore it is probable that these proportions are not correctly stated, but that a much greater quantity of magnetic ore is used. By varying the proportions of crude ore, different qualities of iron suitable for different purposes can be produced. It is understood that the works will be enlarged and extended, and furnaces of greater capacity erected, should the demand for the iron produced justify the outlay. It was not to be expected that the furnace would turn out first-class iron at starting, it being in all such cases necessary to ascertain by experiment the properties of ores before the greatest possible degree of excellence can be attained. The results already obtained, however, fully justify the belief that when the furnace shall have been in operation for a week or so, the best quality of iron will be produced. The enterprising proprietors of the works will have in their possession the means of attaining wealth to which it is impossible to assign limits. The success of this enterprise on Puget Sound should act as an incentive to our own capitalists to embark in a similar undertaking in the province, where it could be prosecuted under more advantageous circumstances. At the Irondale Works the limestone rock has to be imported, and owing to the absence of coal, the smelting has to be done with charcoal. These are drawbacks which add greatly to the cost of iron produced. On Texada Island limestone is abundant, and coal is obtainable in unlimited quantities in the immediate vicinity. These advantages would enable smelting to be there carried on under the most favorable circumstances possible. It has been stated that the company owning the Irondale Works intended putting up a branch furnace on Texada Island, in order to supply the trade in this province as soon as the prospect of sufficient demand for iron to warrant the necessary expenditure of capital shall arise. It would be a reproach to the capitalists of this province to allow a foreign company to come in and manufacture our own iron and reap the profit of the undertaking. The opportunity now offered should be embraced by local capitalists. The extent of the expenditure required has been demonstrated by the cost of the Irondale Works. A furnace erected on Texada Island certainly need not be more costly than that of Irondale, and could probably be put up at less expense. A comparatively small outlay by local capitalists now would enable them to reap the profit that will otherwise be acquired by the enterprising firm who have erected the furnace at Irondale.

The Mississippi River as a Highway for Commerce.

Remarking upon the prodigious effort making by several capitalists to turn the course of trade more into the Mississippi River, and thence to the Gulf of Mexico, the St. Louis *Globe-Democrat* says:

It is now being recognized by the railroad-building monomaniacs that the Mississippi River is rapidly coming into use as a commercial highway, and they are at a loss what to do about it. The river, which was thought to be a passive obstruction to railroad commerce, now threatens to be an active one. It is now beginning to be suspected that nature was not so completely wide of the mark when she put a great navigable river midway between the two oceans. While Chicago has been cut off from communication with the outside world, the river has been actively serving St. Louis in its unprecedentedly large export trade. Chicago has gazed in utter helplessness on the easy and expeditious manner in which St. Louis has got rid of her winter's accumulations of grain and other products, and she is becoming alarmed at her evident disadvantage. There is no longer the pooh-poohing at the attempt to turn trade to the river, which has been so common of late years. It is now acknowledged that the river is a danger which is not only real, but which is rapidly assuming a more threatening character. The alarm extends all the way from Chicago to New York, and it is becoming a serious commercial problem how to compete with, and, if possible, head off the great Southern water route. The present year's business will, beyond a doubt, be decisive of the future tendencies of commercial enterprise. The grain trade of the river will experience a boom which will settle the question of its immense superiority over railroads for cheaply emptying the great valley of its surplus, and bringing into it the commodities needed for consumption. Virtually the Mississippi will become another sea, to which the railroads will be tributary and friendly instead of competitive and hostile. The country will get on with less railroad building, and a large amount of capital will find investment in ways less scornful of nature.

The Engineer's Club of Philadelphia.

At the last regular meeting of the Engineer's Club, of Philadelphia, a paper was read by Col. William Ludlow inviting attention to the practical neglect in this country of military engineering, the power of heavy ordnance, and a formula given for calculating the penetration into solid iron of a projectile with a certain diameter and striking velocity. Three classes of modern naval vessels were referred to—the mailed war ship, with armor 2 or 3 feet in thickness; the iron or steel cruisers, and those of the "composite" type, with metal frames and wood planking. The English system of coast defence, of iron or steel plates 6½ inches thick, alternating with layers of teak, was briefly described, as well as the Grasen system of chilled cast iron or steel in heavy masses of curved sections.

The ultimate connection between the shipbuilding and iron industries of the country and the universal employment of metal in the preparation of war material was pointed out, and the plea advanced that the construction of a naval force and adequate defense for important harbors was clearly demanded, not only for the protection of national interests at home and abroad, but also as the most effective means of stimulating our moribund shipbuilding arts into life, and advancing the metal-producing and cognate industrial interests of the country.

Prof. L. M. Haupt read a paper descriptive of the deflecting armor designed by Mr. N. B. Clark, Past Assistant Engineer U. S. N., for seacoast defence. The inventors' improvements are based upon the fact that it is much simpler to resist the effect of a projectile by deflecting it, than by opposing it by thick masses of inert matter, as is evinced by the "ricochetting" of a shot upon the water.

He protects all the vital parts of the vessel by an iron shield, convex upward, placed below the water line, and so curved that a shot cannot strike point blank. The guns are mounted upon the back of this shield, but encased in double convex disks which are practically invulnerable. They are worked by very ingenious but simple devices in the hold, and loaded, swabbed and run into position for firing by hydraulic pressure. It is claimed that by this means a great economy is effected in the weight of metal required for attack and defense, the vessel is more readily handled, more seaworthy, and is

invulnerable. The principle may be applied equally well to the construction of batteries for defense on shore.

Mr. H. A. Vezin presented a description of his recent investigations of the coal and iron mines and the railroads and harbors of Southern Russia, illustrated by maps of the territory and specimens, and enlivened by many amusing and instructive anecdotes of engineering schemes and methods in that country. The coal basin where his examinations were made is about 160 miles east and west by 60 miles north and south, the coal varying in quality from very hard anthracite in the east to very inferior gas coal in the west. The iron of the coal basin is a brown hematite, formed by the decomposition of the carbonate of iron, and poor in quality, but red hematite occurs further east and accessible from the coal mines.

The relations of the government to the railroads and of the latter to the producers and shippers; the rude and, notwithstanding the great cheapness of labor, the very expensive methods of transporting and shipping the coal; the extraordinary transportation of timber to that almost treeless region, and the difficulty in loading or discharging vessels in the shallow harbors, together with many other matters of information and interest connected with the iron and coal industries, were very interestingly treated.

English Iron Masters and the American Law.

Messrs. A Norrington & Co., of Lond on, have written the following letter to the editor of the London *Iron Trade Exchange*:

SIR.—We have been engaged for some time in a lawsuit with an American firm, the issue of which is of very great importance to traders with America, and we hope the matter will be found of sufficient interest to lay before your readers.

The points of the case are these: In January 1880, we entered into a contract with a Philadelphia firm of high standing to supply them with 5000 tons of rails, delivery of which was to be at the rate of about 1000 tons per month, beginning February, 1880, but the whole contract to be shipped before 1st August, 1880. On receipt of the singed contract in February, two vessels were chartered, one to carry 400 tons and the other 450 tons. The bills of lading for the former' vessel were dated February, and those of the latter March, although the bulk of the goods was actually on board in February. A further parcel of 430 tons was shipped in March. In April we shipped 1346 tons; in May 1099 tons; in June 1000 tons, and in July the balance of 300 tons. Six months being allowed us to complete the contract, one would think that these shipments would constitute a fair delivery; but not so our American friends. The cargo of 400 tons was duly received and paid for according to contract. The 450 tons arrived in the beginning of May, and instructions were given by consignees to berth the vessel at their wharf. In the second week of May, however (the market having fallen in the interval to about £4 per ton below contract price), buyers professed to have just discovered a flaw in the bills of lading—they were dated March—and on this pretext they declined to make payment, or to take any further quantity. We proceeded, however, with the shipments as before mentioned, and on completion of the contract we commenced an action in the Pennsylvanian Circuit Court to recover damages on the pleas, first. that senders had a right to ship irregularly, provided shipments were completed by 1st August, and second that, if not, the contract was a severable one, and buyers had their remedy to recover any loss sustained by senders' failure to ship the stipulated quantity in February; but had no right to rescind balance of contract. The law of England in such a case is distinct and clearly in our favor, but it appears to be still an open question in America. The learned judge in summing up confessed that he regarded the point involved in serious doubt; and remarked as follows: "The doctrine of severableness (if I may be allowed to coin a word) in contracts is an invention of the courts in the interest of justice, designed to enable one who has partially performed and is entitled on such partial performance to something from the other side, to sustain action in advance of complete performance as where goods are sold to be delivered and paid for in parcels, to enable the seller to recover for the parcels delivered in advance of completing his undertaking. But this equitable doctrine should not be invoked by one who had failed to perform for the purpose of defeating the others' rights to rescind, and thus to protect himself against the consequences of his own wrong. Against such a party the contract should be treated and enforced as entire. To say, therefore, that the contract is severable does not, I repeat, therefore advance the argument. To render the plaintiff's position logical it is necessary to take a step forward and hold that such a transaction (it would not be accurate in this view to call it a contract) constitutes several distinct, independent contracts. Then, of course, it follows that a failure as respects one of several successive deliveries affords no right to rescind in regard to those yet to be made. And this step, after much apparent doubt and hesitation, the English courts have taken. It was the necessary outgrowth of the decision in Simpson *vs.* Crippin which overruled Hoare *vs.* Rennie. In our own country the cases are inharmonious and the question unsettled. After careful examination of what has been said on the subject, I shall not be surprised if the courts here finally adopt the present English rule, and thus substitute compensation in damages for the remedy by recission to the extent there done. I say this, however, not because I think it wise to adopt this rule, but because of an apparent leaning in that direction. The question, however, as here presented, is properly for the Supreme Court, to which I hope it may be carried and the rule thus be settled." We reserved right to move for its removal. As will be seen, the matter is left practically where it was—it is left open for future decision.

Contracts are frequently made with American firms for delivery of iron, rails, &c., in monthly quantities, and should any shipment be prevented or delayed by accident it would prejudice the whole contract and give the buyers the right to rescind. This is a state of matters that ought not to exist, and it is for the interest of all traders with America that an effort be made to establish there the rule now existing in England; and to do this it would be necessary to carry our case to the Supreme Court at Washington, under the guidance of the most eminent counsel of the American bar. The cost of doing this, although serious to an individual firm, will fall lightly if divided among the houses most deeply concerned in the question; and we therefore beg to invite all firms who have an interest in this matter to correspond with us with a view to concerted action.

Molders in Chicago.

Mr. T. J. Morgan, in a report on the iron and brass molders of Chicago, says:

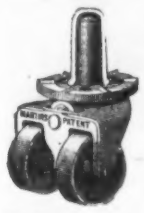
The number of molders employed in Chicago are: Machinery and agricultural work molders, 600; stove plate molders, 200; brass molders, 100; apprentices, 30. Sixty per cent. of the iron molders and 90 per cent. of the brass molders are Irish or Irish-Americans. The average wages by the day are $2.60, but the average weekly earnings for the whole year do not exceed $14. Stove work is all done by the piece. Nearly all who learn this trade serve as apprentices for three or four years. In some shops the apprentices are discharged as soon as their time expires, to make room for more apprentices. The brass molders have no union. The iron molders have—the National Iron Molders' Union. Eighty per cent. of the molders of Chicago are members of the union. This occupation requires considerable skill and experience.

Constant efforts are being made to adapt machinery to this work, and in cases where the work is of simple form and great quantities are required machinery is used. The Chicago Malleable Iron Works and the Crane Bros.' Manufacturing Company are using molding machines, tended by boys and common, unskilled laborers. Machines are also used in other factories in molding water pipes, gear wheels, pulleys, &c. Females and boys are employed, the females as core-makers and the latter on light work. Asthma, colic and consumption are the diseases peculiar to this trade. The general conditions of the trade are disagreeable for the workers. The shops are filled with poisonous gases. Dust and dirt cover the molders outside and fill up the pores of their skin and fill up their lungs. In the winter months they work in the damp, half-frozen sand, and are wet all through in the evening, while pouring molten metal and shaking out red-hot work, by the heat, gas and steam that come from the hot metal and damp sand. In the summer the heat of these shops is so offensive, after reaching 120° F., that the men are forced to quit work. By proper construction of the foundries and blacksmith shops nearly all of these unhealthy conditions could be removed or prevented, but in the present scramble for existence and wealth the almighty dollar counts more than human life, and no relief can be expected unless the State and municipal governments enforce proper sanitary regulations upon employees as well as employers, for the workman is as stupidly careless and reckless of health as the employer is indifferent to the health and safety of the employees and workmen, women, boys and girls. Much cause of complaint exists in the custom of employers keeping their workmen waiting for melted metal after the quitting time, the men getting no pay for such time. This complaint is expressed by one of their poets thus:

Sometimes we get through at seven,
Oftentimes long after eight;
If our pay was by the hour,
Molders would never be late.

The mental development of the molder is circumscribed by the requirements of his occupation. The physical exhaustion by the day's labor prevents mental work after working hours. The trades union has no appreciable influence in regulating the employment and the rate of wages. It is chiefly an organization caring for the sick.

Underground Railways in New York.—Still another organization, entitled the Central Tunnel Railway Company, has filed articles of incorporation at Albany—capital, $500,000. There are now, therefore, no less than four companies which seek to establish underground railway communication between the upper and lower parts of the city. The original, known as the Beach Pneumatic Tunnel, is supposed to have no real existence, though efforts are making to give it a new vitality. The second and third companies are known as the New York Underground Railway Company, owning the charter of 1869, and the Underground Railway Company, respectively. These are about to be consolidated under a provision of the Tunneling Act of 1880, and, according to the opinion of their counsel, Mr. George Ticknor Curtis, are in complete possession of legal rights entitling them to construct a road as soon as commissioners can be appointed, according to the provisions of the statute. A majority in value of the property owners on the line under Broadway having refused their consent, it remains with those commissioners to determine whether the road ought to be built, and in what manner, and application for the appointment of such commissioners is now pending before the general term of the Supreme Court. The officers of the New York Underground Railway Company, as we learn by direct inquiry, regard the proposal of the Central Tunnel Railway Company as only ridiculous, it being impossible for them, as one of the officers remarked, "to build a road over our heads." And it would be impracticable for two rival companies to occupy the same route jointly, as would be necessary in the case supposed, inasmuch as the New York Underground Railway Company, if they have any rights at all, cover the whole breadth of the street, and could not lay parallel tracks in any narrower space.



Ordinary Stem.

PHŒNIX CASTER CO.

Round.

Manufacturers,

INDIANAPOLIS, IND.

Our Caster is no experiment. Introduce yourself to these goods by a very small stock order of our selection. Terms, 60 days. Ship them back if they fail in your esteem. Send for catalogue.

The annexed list of sales indicates the increased demand for our Caster.

WE HAVE SOLD

MARTIN'S PAT. CASTERS

To the following Firms, as below:

Simmons Hardware Co., St. Louis, Mo.
1879..... $387.61
1880..... 660.70

Kellogg, Johnson & Bliss, Chicago.
1878..... $98.39
1879..... 334.22
1880..... 515.66

A. J. Wilkinson & Co., Boston.
1879..... $412.38
1880..... 520.40

Geo. A. Rubleman, & Co., St. Louis.
1879..... $246.76
1880..... 629.53

Hibbard, Spencer & Co., Chicago.
1879..... $322.60
1880..... 590.92

Berkey & Gay Furniture Co., Grand Rapids. Mich.
1879..... $76.98
1880..... 171.69

Nelson, Matter & Co., Grand Rapids, Mich.
1879..... $74.60
1880..... 241.73

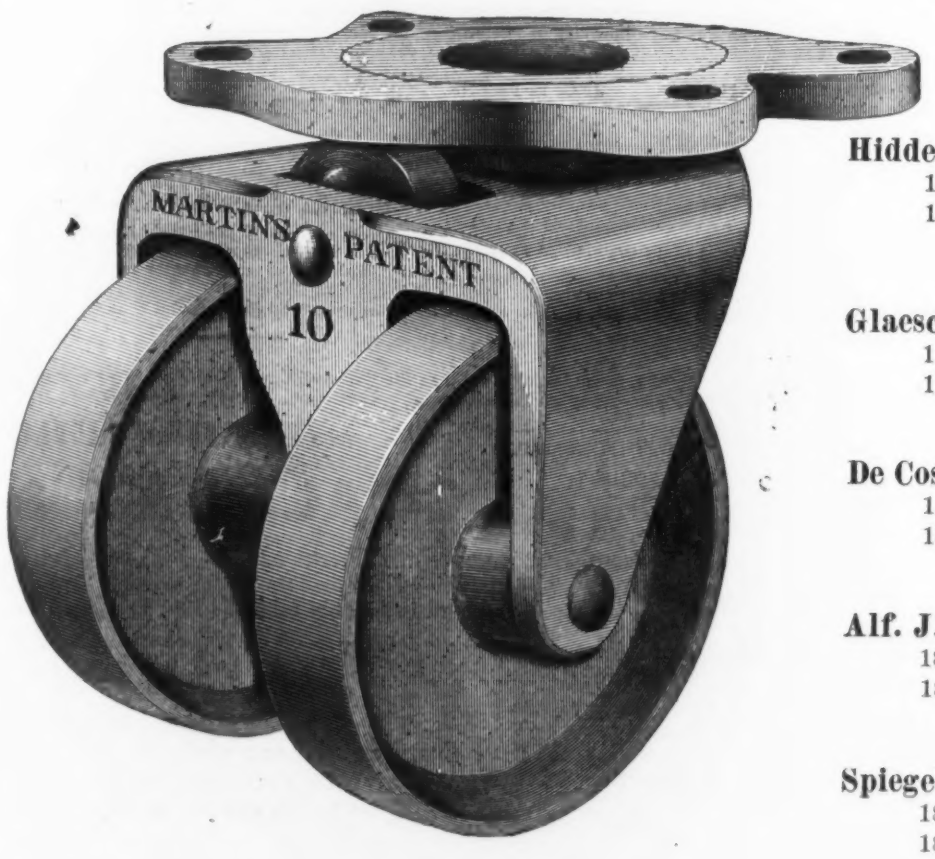
J. L. Wayne, Jr., Agent, Cincinnati, O.
1879..... $134.51
1880..... 368.97

Rogers, Engle & Co., Dayton, Ohio.
1879..... $51.70
1880..... 94.57

Kilborn, Jones & Co., Columbus, Ohio.
1879..... $64.38
1880..... 158.07

Phœnix Furniture Co., Grand Rapids, Mich.
1879..... $49.90
1880..... 104.43

Made in Ten Sizes, to Carry the Smallest Chair or Tons of Burden.



Our different sizes Casters are adapted for use as designated below:

No. 2. For parlor chairs and other very light furniture.

No. 3. For invalid and office chairs, extension and other light tables, rope reels, flower stands, &c.

No. 4. For bedsteads, &c.

No. 5. For heavy bedsteads, book cases, flower stands, refrigerators, safes, sideboards, desks or very heavy furniture.

No. 6. For pianos, extra heavy sideboards and book cases.

No. 7. For show cases, &c., &c., &c.

No. 8. For light store trucks, ice chests, heavy refrigerators, heavy flower stands, &c. Especially useful in a truck under any heavy sample goods.

No. 10. For heavy ice chests, magazine boxes, store trucks, heavy show cases, beer boxes, large refrigerators, or any very heavy weight. Especially adapted for use in beer bottling, fruit-canning, tobacco or warehouse establishments, where heavily loaded tables need to be moved.

No. 12. Medium warehouse trucks.

No. 14. Warehouse trucks, or for carrying any immense load.

Pollock, Weaver & Goss, Rochester, N.Y.
1879..... $27.04
1880..... 232.20

Kennedy, Spalding & Co., Syracuse, N. Y.
1879..... $41.74
1880..... 187.28

Hidden & Lounsberry, Cincinnati, Ohio.
1879..... $87.40
1880..... 237.06

Glaescher & Co., Cincinnati, Ohio.
1879..... $3.60
1880..... 332.61

De Coster & Clark, St. Paul, Minn.
1879..... $52.14
1880..... 173.84

Alf. J. Wolf, New York City.
1879..... $60.00
1880..... 517.25

Spiegel, Thoms & Co., Indianapolis, Ind.
1879..... $298.84
1880..... 311.80

John C. Peterson, St. Louis, Mo.
1878..... $312.17
1879..... 744.65

We give below a few orders received since January 1st, 1881:

	Sets.
Kellogg, Johnson & Bliss, Chicago	466
Geo. A. Rubleman & Co., St. Louis, Mo	520
W. Bingham & Co., Cleveland, O	484
Nelson & Matter Furniture Co., Grand Rapids	100
Phœnix Furniture Co., Grand Rapids	120
Berkey & Gay Furniture Co., Grand Rapids	414
Orr & Locket, Chicago	243
Hibbard, Spencer & Co., Chicago	688
Emil A. Nestler, New Orleans	244
Spiegel & Thoms Furniture Co., Indianapolis, Ind.	288
Samuel Cupples & Co., St. Louis, Mo	406
Baker & Hamilton, San Francisco, Cal	306
A. H. Andrew's Furniture Co., Chicago	200
Udell Wooden Ware Co	300
Cincinnati Hospital	300
Chase Piano Co., Richmond, Ind	150
McIntyre & Goodsell Piano Co., Grand Rapids	50
Simmons Hardware Co., St. Louis, Mo	541

Catalogue and discounts furnished on application.

tandard Alarm Money Drawer.

STOVE TRUCK

NEARLY ALL

Wrought Iron.

Can be run in straight line down an isle.

5000 Stove Trucks Sold in 1879.

9000 Stove Trucks Sold in 1880.

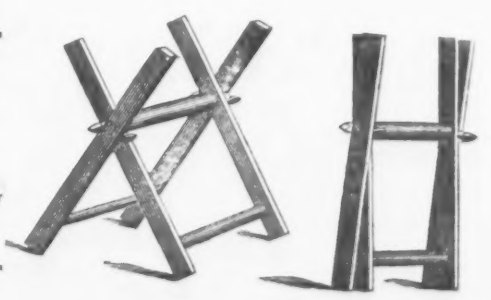
HOOSIER SAW BUCK.

TUCKER & DORSEY,
Manufacturers,
INDIANAPOLIS, IND.

The Only Perfect Folding Saw Buck in the Market.

Price.....$4.50 per Dozen.

Discount .....



DE-OXYDIZED BRONZE.

DE-OXYDIZED BRONZE (patented) is an alloy of **LAKE COPPER** and best **ASIATIC TIN** in any proportion required, so as to be either as **ductile as copper, as tough as iron, or as hard as steel,** according to the proportion of Copper and Tin used.

The **process** of making the alloy is what constitutes its superiority over any other known alloy of Copper and Tin or any other Bronze composition. The castings made from this metal, owing to its perfect fluidity when melted, possess great density, perfect soundness and homogeneity. Unlike certain bronze and other compositions, it can **be handled without the least difficulty by any ordinary founder,** as it flows like oil in pouring.

Thus the necessity and trouble of shipping patterns, the delay in receiving castings and the expense of the double charges of freight or express, such as attend the obtaining, in many cases, of Phosphor Bronze, are entirely avoided by ordering **D. O. B. in ingots.** Where this metal has superseded other compositions of similar character, it **has endured three times as long.** In a word, we claim that **De-Oxydized Bronze** not only has none of the objectionable features attributed to similar compositions, but that it possesses all their good qualities in addition to its own merits, and advantages peculiar to itself, such as the following summary will make clear:

1. ITS GREAT CONVENIENCE IN HANDLING as compared to Phosphor Bronze.
2. We claim for it SUPERIOR ANTI-FRICTION QUALITIES to any other known Brass or Bronze.
3. GREAT MALLEABILITY AND TENACITY.
4. Its homogeneousness and smoothness of surface render it capable of the HIGHEST POLISH.
5. As before mentioned, we claim for it UNEQUALED ENDURANCE.
6. We claim that JOURNALS MADE of D. O. B. REQUIRE ONE-FOURTH LESS LUBRICATING MATERIAL than any other composition yet known.

Finally, this metal has never failed to give more than satisfaction wherever used. To sustain our statements, the following testimonials will suffice:

Henry Disston & Sons, Saw, Tool, Steel and File Works, Front and Laurel Streets,

Philadelphia Smelting Company, City: PHILADELPHIA, October 4, 1879.

GENTLEMEN: After a trial of eighteen months of your "DE-OXYDIZED BRONZE" as Journal Boxes in our Rolling Mill, where great pressure is required, we take pleasure in recommending it as being superior to any we have heretofore used. Very truly, HENRY DISSTON & SONS.

Office of Eagle Iron Works, 1162 North Third Street,

Philadelphia Smelting Company: PHILADELPHIA, August 29, 1879.

GENTLEMEN: In reply to yours of the 28th inst., we beg to say that we have been using your "DE-OXYDIZED BRONZE" for over a year, and have found it better than any composition boxes we have used; and as long as you continue to make it the same quality, we shall use no other metal in our Engine Boxes. We therefore take pleasure in recommending it to Engine Builders in general.

Yours respectfully, HOFF, FONTAINE & ABBOTT.

Office of Union Brass Manufacturing Company,

CHICAGO, Dec. 23, 1880.

Philadelphia Smelting Company, Limited, Twelfth and Noble Streets, Philadelphia, Pa.:

DEAR SIRS: In reply to your inquiry of yesterday as to our opinion of "DE-OXYDIZED BRONZE" for Railway Coach Trimmings, I beg to submit that we have used it up to present writing for the trimming of something over 100 coaches. One marked peculiarity of this metal, when highly finished, is non-liability to abrasion, and its non-affinity with the gases of the atmosphere, which in embossed work is a great desideratum. To those willing to pay more in the first cost, we would confidently recommend "DE-OXYDIZED BRONZE" Trimmings as cheaper in the end. Yours very truly, J. HALL DOW, President.

This metal is used for the following purposes, and we can refer to large concerns in addition to above, through the New England and Middle and Western States, who are using it in preference to any other.

1. Engine, Car and Machinery Journals.
2. Pumps, Valves and Linings, Cylinders, Pinions, Cogs, Plungers, Crank Pins, &c.
3. Car Trimmings, Harness and Coach Furniture, House Hardware, Steam Fittings, &c.
4. Wire, Sheets, Rods and Tubes.

And for any other purpose that a **handsome, durable and sound** Bronze is required. We especially commend it to **Railroad Companies, Car Builders, Machinists, Engineers** and others requiring a **Journal Metal** that will stand the **severest friction** and the **heaviest pressure.**

Manufactured and for sale in Ingots and Castings by the

PHILADELPHIA SMELTING COMPANY, Limited,

S. E. COR. TWELFTH AND NOBLE STS., PHILADELPHIA, PA., U. S. A.

GENUINE BABBITT.

Our Genuine Babbitt is superior to all other makes in the market in every particular. We guarantee it to be perfect in its Anti-friction qualities in machinery AT A SPEED OF **10,000** PER MINUTE, or at **1000** TONS PRESSURE for **10** YEARS. We append below testimonials from A1 houses justifying us in the above claims.

From J. L. Marsden, Supt., Blake Crusher Co., New Haven, Conn., and Farrell Foundry and Machine Co., Ansonia, Conn.

AUGUST 17, 1880.

The "Genuine Babbitt" we have bought from you gives perfect satisfaction in our Stone Breakers. We have it working in bearings 12 in. long and 5 in. diameter. One-half the revolution of shaft there is a pressure of 900 to 1s. The other half 2½ tons. The shaft makes from 200 to 250 turns per minute. I think this is a very severe test, yet they have been running for more than one year.

From Witherby, Rugg & Richardson, Worcester, Mass.,

Manufacturers of Wood Working Machinery.

NOVEMBER 20, 1880.

Send us 1000 pounds "Genuine Babbitt" divided into Bars as usual. We think the continuance of our trade with you in the face of the constant effort made by other parties to divert our patronage, is a sufficient recommendation of your goods. We speed some journals as high as 6000.

Yours truly, WITHERBY, RUGG & RICHARDSON.

From this it will be seen that it can have no superior, or even equal, as an Anti-Friction Metal in anything manufactured. We make besides all grades of Anti-Friction Metals,

Letter A, Guaranteed at a speed of 2000.
Letter B, Guaranteed at a speed of 1000.
Letter C, Guaranteed at a speed of 800.
Letter D, Used for Shafting.
Letter E, Used for Ag'l Implements, &c.
Letter A L, For slow speed.

All our Metals are made from best Lake Copper, Asiatic Tin, Cookson's Antimony and best Refined Lead, and in all cases run free at melting heat, without drossing, and without any necessity for heating the journals into which they are poured.

MANUFACTURERS' AND MACHINISTS' NAME PLATES,

REAL BRONZE, FINISHED.

Patterns from $3 upwards, according to Size and Style. Plates, $3 per dozen and upward, according to Size and Style.

SKETCHES FURNISHED FOR APPROVAL BEFORE MAKING PATTERNS.

We have a specialty in this line and produce a handsomer plate, at less money, than can be obtained elsewhere.

ART AND ECCLESIASTICAL METAL WORK IN BRASS AND BRONZE.

GAS FIXTURES, ALTAR CANDLESTICKS, SANCTUARY LAMPS, CHANCEL RAILS, PULPITS, &c.

PHILADELPHIA SMELTING COMPANY, Limited,

S. E. COR. TWELFTH AND NOBLE STREETS, PHILADELPHIA, PA.

WASHINGTON NOTES.

The Duty on Hoop Iron and Cotton Ties.

(From Our Own Correspondent.)

WASHINGTON, D. C., April 6, 1881.

The Secretary of the Treasury has under advisement the application of the manufacturers of hoop iron for a reference of the decision of the late Secretary of the Treasury, on the cotton tie question, to the Attorney General. The manufacturers set forth, in a forcible manner, the grounds for this request. In addressing the Secretary of the Treasury they represent that an important branch of the iron industry of the United States, known as the hoop iron and cotton-tie manufacture, is at present in a deplorable condition; that rolling mills which employed thousands of operatives directly, and many more thousands indirectly, in the production of these specialties in the iron business, are at a standstill from being unable to compete with foreign manufacturers for the supply of their products in the American markets. This stagnation has reference mainly to the manufacture of cotton ties, for which, year after year, there is an increasing demand in the United States, but which the iron workers of this country cannot supply, because of the competition of English manufacturers, who can undersell in consequence of existing rulings of the Treasury Department as to rates of duty. These rulings are contrary, as they believe, to the spirit and intent of the tariff laws which were made for the protection of American labor. They continue:

"It would be ungenerous and unwise to trouble the Secretary of the Treasury with our grievances at this time unless we believe it to be in his power, and according to his inclination, to redress or relieve them when fairly laid before him. To this end we ask your attention to Rev. Stat. 2nd ed. pp. 465 and 467. The clauses affecting the subject are particularly these: 1st. All band, hoop and scroll iron from one-half to six inches wide, under one-eighth of an inch in thickness and not thinner than number twenty wire guage, one and one-half cents per pound. 2d. Manufactures, articles, vessels and wares not otherwise provided for, of brass, iron, lead, pewter, and tin or other metal (except gold, silver, platina, copper and steel) or of which either of these metals shall be a component material of chief value, thirty-five per centum ad valorem. Under the latter class hoop iron has been brought into the United States from Europe at the ad valorem instead of the specific duty. Evasions have been practiced more or less successfully on all classes of iron and steel manufacture, but on none has contrivance been more persistently applied than on hoop iron, in the case of cotton ties particularly. The subject has been discussed before the Treasury Department frequently during the last few years, by the importer on one side and the manufacturer on the other, and with varied results. A synopsis of these cases and results may now properly be presented to you, and as briefly as possible. Up to December, 1878, a specific duty of 1¼ to 1¾ cents per pound was paid on hoop iron, according to size. Some time previous to this, importers introduced hoop iron, cut to specific lengths and with holes or holes punched in one end, claiming to pay the ad valoram duty as an 'article of manufacture not otherwise provided for.' Suits have been brought at New Orleans and New York in the lower courts at earlier periods, to determine rates of duty in particular cases, and verdicts in favor of the ad valorem duty rendered. Through a misconception, afterwards acknowledged by the Attorney General, no appeal was taken to the higher courts. The courts and juries in the places named were imbued with free-trade principles. In consequence of these decisions, or for other reasons, the Treasury Department issued in substance the following order:

"'December 21, 1878. Order 3824.—Hoop iron cut into lengths and holes punched therein, shall be admitted at 35 per cent. ad valorem, instead of 1½ cents per pound as previously rated.'

"On a remonstrance by the manufacturers April 17, 1880, order 4496 states that order 3,824 is reconsidered, and that the department is satisfied that cutting and punching with more or less holes does not remove the hoop iron from the category of hoop iron in Schedule E of Revised Statutes, and specific duty shall be collected, and that the previous decision, 3824, was in violation of law. This last decision is evidently in accord with the purpose of the tariff law; and covers importation of hoop iron for barrels, cotton ties, and other articles which by slight advance toward manufacture, at a most trifling cost for labor, had been introduced into this country from abroad at the ad valorum instead of the specific duty. But the foreign manufacturer of cotton ties, with continued perseverance, still attempted to evade the law by further contrivances. A cotton tie is about 11 feet long, fastened around the bale by a buckle at the ends. Cutting hoop iron into these lengths was resorted to, and buckles strung on an occasional tie, so as to characterize 30 lengths with buckles so strung and tied together as a manufactured 'bundle of cotton ties.' On application to admit these cotton ties at ad valorum rates the Treasury Department, by order 4550, May 17, 1880, decided adversely, and classed them as hoop iron at specific duty.

"So far as these late decisions of the department are concerned, they sustain the American manufacturer by reversing the former ruling of 1878. In consequence of that ruling in favor of ad valorem duty, importations had increased, and large orders in '79 and early in '80 were said to be placed in England for barrel hoop iron and cotton ties. To relieve the importer who had purchased abroad in good faith previous to late decisions, the Secretary of the Treasury caused a resolution to be passed by Congress June 14, 1880, providing that all contracts of a *bona fide* character for this class of iron made abroad before March 12, 1880, shall be admitted at 35 per cent. ad valorem, so an order (4577, June 16, 1880) to this effect was issued, and in answer to an inquiry by the Collector of Customs, New York, on this same subject, Order 4580, June 17th 1880, was issued to the same effect and affirming the doctrine that between hoop iron imported for barrels or cotton ties there is 'no substantial difference.' Before this time cotton ties were imported in bundles, as before stated. Determined to evade the last, the foreign manufacturer now rivets the buckles, formerly shipped loose, to one end of the tie, although such fastening is of no value to the tie, is not necessary, was never before used, and is rather a disadvantage than otherwise. On discovering this new effort to establish a cotton tie as an article of manufacture not otherwise provided for, to be admitted at ad valorem instead of specific duty, an American manufacturer inquired of the Treasury department as to how it would be classed. Whereupon Order 4589, June 26th, 1880, was issued, making it dutiable at 35 per cent. ad valorem. This decision, so contrary to the spirit of other rulings, if persisted in, will utterly destroy, as it has already seriously affected, this important branch of the iron industry of the United States.

"It is no discredit to the framers of the tariff law of 1864 that they did not provide specifically against all possible attempts to evade it, particularly as the spirit of protection to American labor is so clearly set forth in its provisions. Doubtless it was thought that unforeseen cases, as they arose, would be easily determined by the intent and purpose of the law. Clearly the revenue from the more advanced manufacture was to equal or exceed that on the cruder commodity, with less labor applied to its production, of which the manufactured article is composed. This principle pervades all the tariff laws, and in an especial manner those relating to iron, steel and other metals; the basis of the principle being protection to labor as well as capital.

"This view is sustained in Revised Statutes, page 465, where manufactures of steel, &c., shall pay a duty of 45 per cent. ad valorem. 'But all articles of steel manufactured, or of which steel shall be a component part, not otherwise provided for, shall pay the same rate of duty as if wholly manufactured.'

"Apply this to the cotton tie case. The cost of hoop iron, of which cotton ties are made, is, in England, say $40 per ton of 2240 pounds; the cost of riveting buckles on the same is about $1 per ton. On this last expenditure of labor the claim of manufacture is set up. If sustained, the ad valorem duty per ton would only amount to $14.35, but if not sustained the specific duty is $33.60 per gross ton. There is no reason why this inconsiderable amount of labor should defeat the intention of the Tariff law, and destroy the business in this country. Evasions of the law will still be attempted in this and every other department of iron manufacture, for which there is no remedy equal to a decided position taken by the present administration of the Treasury department, which will not only prevent the recurrence of these subterfuges, but give that permanent encouragement to American labor which meets with more universal approval by the people than ever before since the formation of the government.

"We do not desire to criticise closely or to censure unjustly certain late constructions of the law. We desire redress. Our condition is serious. Already we are at bay. Our mills and workshops are threatened with disaster. Last year's trade was materially lesssened and damaged by importation of cut hoops and cotton ties. This year's business is uncertain, if not hopeless. No cotton ties will be manufactured in this country this year or hereafter under present rulings. No dealer dare buy his supply from the American manufacturers, because importation will surely commence unless speedy relief is granted. No manufacturer can make a cotton tie without certain loss as the tariff is now interpreted. And while American labor is thrown idle, not even the American consumer is sure of the benefit of lower prices, for the importer has the trade in his own hands for the present at least.

"Although this branch of iron industry started hopefully, with capital invested under the supposed protection of the tariff laws, as the rulings now stand it must prepare to be wiped out from American enterprise, and its mills, at a great loss, must be converted into other branches of the iron business, producing thereby unnecessary competition and ultimate disaster to what otherwise would be a fairly remunerative business. Immediate relief is necessary and most earnestly requested. We may appear to be importunate, but it is hard to be passive. At this time last year a large number of rolling mills in the different States had commenced to make cotton ties for the coming crop; this year not one has ventured to start. We feel discouraged. Our workmen are discontented, particularly as the loss of trade comes so soon after promise of protection to American labor, which carried their votes successfully for the administration. Justice demands and good policy advises that speedy action be taken to place this industry on a proper footing of equal protection with other branches of iron and steel manufacture—a protection fully intended, and expressed with as much precision in the Tariff law of 1864 as the condition and knowledge of the business at that time enabled its framers to make it."

Attached to this clear statement of the case is a list of the hoop-iron and cotton-tie manufacturers who make this appeal. All the iron and steel workers of the United States are in sympathy, and await with much confidence such action of the Secretary as will speedily restore this branch of the iron business to a prosperous condition among the industries of the country. By making all cotton ties chargeable with a duty of 1½ cents per pound, this most desirable end will be accomplished and cause justice to be done.

The document is signed by Thomas H. Wells, of Youngstown, Ohio, chairman of the committee of hoop iron manufacturers.

The following is the list:

Wm. H. McCurdy & Co., Cleveland, Ohio.
Cartwright, McCurdy & Co., Youngstown, Ohio.
Youngstown Rolling Mill Co., Youngstown, Ohio.
Kimberly, Carnes & Co., Sharon, Pa.
Jones & Laughlin, Pittsburgh, Pa.
Wm. Clarke & Co., Pittsburgh, Pa.
Lindsay & McCutcheon, Pittsburgh, Pa.
Graff, Bennett & Co., Pittsburgh, Pa.
Chas. F. Schoener, Philadelphia, Pa.
United States Iron Co., Youngstown, Ohio.
J. Painter & Sons, Pittsburgh, Pa.
Altoona Iron Co., Altoona, Pa.
Maiden Creek Iron Co., Blandon, Pa.
Syracuse Iron Co., Syracuse, N. Y.
Rome Merchant Iron Mill, Rome, N. Y.
Ulster Iron Co., Saugerties, N. Y.
Gosnold Mills, New Bedford, Mass.
Fall River Iron Co., Fall River, Mass.
Nevigold, Scheide & Co., Bristol, Pa.
Reversible Cotton Tie Co., Syracuse, N. Y.
Lawrence Iron Works Co., Ironton, Ohio.

A statement which has been prepared for the information of the Secretary of the Treasury, shows that the annual consumption of cotton ties in the United States now reaches 30,000 tons, and as our manufacturers are diverted from this enterprise by the suicidal rulings of the Department under the late adminstration, the effect will be ruinous. The statistics of imports also exhibit some alarming facts. The band, hoop and scroll iron imported into the United States for seven months ending January 31, 1880, amounted to but $40,601. After the leaning of the Department to the side of the importers, and the tinkering of the Democrats in Congress became known the shipments to this country at once increased. From $40,600 for seven months ending January 1, 1880, the imports jumped to $334,699 for seven months of 1880. Secretary Windom, in speaking on the subject, expressed a desire to do what might seem best for the country, and will take the subject up and determine without delay.

The Pressed Glass Trade.

The pressed glassware manufacturers met at Pittsburgh on the afternoon of March 22. The spring business of the glassmen opened very slowly. The protracted winter interfered with sales, stock began to accumulate and prices were away down. The supply was certainly greater than the demand, and it was seen that some remedy must be obtained. A meeting of the manufacturers was held, and after discussing the state of affairs a committee was appointed to devise a plan for relief. This committee, after due deliberation, presented the following document to the meeting:

PITTSBURGH, March 22, 1881.

At a meeting of the Pressed Glass Manufacturers held this day, it was unanimously *Resolved*, That we, the Pressed Glass Manufacturers, agree to stop for eight (8) weeks, between the 1st of May and the 1st of September, 1881.

The resolution was adopted, and before evening had been signed by almost all of the manufacturers. In addition to the firms located in Pittsburgh, the Wheeling and Eastern Ohio firms are included in this movement, and are heartily in favor of it. The results will be noticeable at once. In the first place, a stoppage of eight weeks, if it is universal, will lessen production to the extent of $1,500,000, and consequently by taking that much off the market lessen competition. While this will not be effected until after the shut down, prices are expected to stiffen at once. The question will arise whether all the glassmen will keep the agreement. Former efforts have failed because three or four men will persist in running; others refuse to stop unless all do, and the result is, that but one-half of the factories are closed. This time a different result is confidently expected. The largest of the Eastern jobbers state that they will not buy from any manufacturer who will not agree to stop, and this is an argument of the strongest kind. The employees, as a rule, will be pleased with the shut down. Working in a glass house in the dog days is neither pleasant nor healthy, and the more intelligent of the men claim they can make more by working ten months in a year than by working twelve. There will be no set day for drawing the bars, each operator suiting himself in the four months between the first of May and the first of September.

Space Around Steamboat Boilers.—A circular from the United States Treasury Department containing official copies of the Steamboat Rules and Regulations, was read at the annual meeting of the Board of Supervising Inspectors. The principal change is in Rule No. 10, applicable to all steamers hereafter built, which now reads as follows: "All steamers navigating rivers, having boilers externally heated, shall have a clear space of not less than 6 inches between the boilers and woodwork on either side, and 4 inches on the top of said boilers. All steamers navigating the ocean, sounds, lakes, bays and rivers, the boilers of which shall be internally heated, shall have a clear space of at least 4 inches on either side, and at the top not less than 2 inches clear space above the covering of the boilers. All woodwork or other ignitable substance approaching within 2 inches of the boiler shall be suitably sheathed with metal, so adjusted as to permit a free circulation of air between the sheathing and the ignitible surface. All boilers shall have a clear space at the back and ends thereof of 2 feet opposite the back-connection door." It is to be observed, in the language of the Solicitor of the Treasury, "that there is nothing in the rule which forbids the local board from requiring more space than that mentioned, if, in its judgment, it may, in any case, be necessary to require it." Practically, therefore, the amended Rule 10, instead of prescribing the exact space which shall be allowed between the boiler and the woodwork adjacent, leaves this question to the several local boards in the exercise of their free judgment.

A recent Shanghai letter says that the telegraph line from that city to Pekin is under contract, and that the proposed railways will be commenced, within two years, from Tientsin to Pekin and Tokio—the latter on the American system, beyond a doubt.

Mr. Burchard, Director of the Mints, has gone to St. Louis to establish the assay office in that city provided for by the last Congress.

New Cuban Customs Regulations.—New customs regulations for Cuba will go into full force May 1, 1881, subject to the following limitations: 1. From May 1, for all vessels arriving from the east coast of North America, Mexican Gulf and South America as far as the mouth of the Orinoco, as also vessels proceeding from Bermuda and other islands situated in said gulf and in the West Indian and Caribbean seas. 2. From June 1, for vessels proceeding from the western coast of South America, from the mouth of the Orinoco to Cape Horn, and for all vessels proceeding from Europe, the Canary Isles, Cape de Verde, the Azores and such as come from Northern and Western Africa up to the Cape of Good Hope. 3. From August 1, for vessels proceeding from countries not included in the above cases. The Madrid press complains that this alteration in the customs regulations for Cuba, although voted in the Cortez last year, has not been published in the Madrid *Gazette*.

Mails to China and Japan.—By order of Postmaster-General James, the postmaster at San Francisco will hereafter advise the postmaster at New York by telegraph of the latest New York City dates forwarded by each mail steamer departing from San Francisco for Japan and China, and also of the hours and dates of arrival at San Francisco of mail steamers from Japan and China, including, if practicable, dates of China mail brought by them, and the dates and hours of departure from San Francisco of the trains by which said mail is forwarded eastward. These reports will be made public by Postmaster Pearson.

The annual report of the officers of the Panama Railroad Company for 1880 shows that the gross earnings from all sources amounted to $2,227,674.11, and the total expenses of every kind to $1,175,415.72, leaving as net earnings $1,102,258.39. The number of passengers carried during the year was 26,801, against 23,729 in 1879. The number of tons of freight transported amounted to 157,432, against 161,743 tons in 1879 and 152,477 tons in 1878. The Central American traffic, with the exception of coffee, showed a satisfactory increase. The track and roadbed are now in better condition than ever before, and 11 miles of steel rails were laid during the year, completing the main line and the sidings chiefly used. The treasurer's report shows that the assets of the company are $4,567,777.30, and the liabilities, $3,183,785.51, leaving a surplus December 31, 1880, of $1,383,991.79. The dividends paid during the year amounted to $1,120,000,

A bill introduced into the Pennsylvania Legislature on Monday, authorizes companies incorporated under the laws of any other State, or of the United States, for the manufacture of steel, to erect and maintain within that State buildings and manufacturing establishments, and to take, have and hold real estate not exceeding 100 acres, necessary and proper for manufacturing purposes.

A large number of prominent merchants of this city have addressed a petition to President Garfield, asking that the present Collector of this port, Gen. E. A. Merritt, may be retained in that office for the full term for which he was appointed. This request is urged in the interests of the commerce of New York. We notice among the signatures the names of many firms identified with the hardware trade.

Special Notices.

NOTICE.

The Limited Partnership Association trading under the name and style of "The Edgar Thomson Steel Co., Limited," was, by mutual consent of all the parties in interest, dissolved March 31, 1881. The business of the Association will be settled by the Chairman and Treasurer, or either of them, at the branch office, No. 48 Fifth avenue, Pittsburgh

THOMAS M. CARNEGIE, Chairman,
D. A. STEWART, Treasurer.

The business heretofore conducted by the Edgar Thomson Steel Company, Limited, having been purchased by this Association, will, on and after this date, be carried on under the laws relating to limited partnerships, under the name and style of

CARNEGIE BROTHERS & CO., LIMITED.
Thomas M. Carnegie, Chairman.
D. A. Stewart, Treasurer.

Pittsburgh, April 1, 1881.

The partnership existing between Andrew Carnegie, Thomas M. Carnegie and Henry Phipps, Jr., under the name of "Carnegie Brothers & Co.," was dissolved March 31, 1881. Either of the undersigned will settle the business of the firm at their office, Thirty-third street, Pittsburgh.

ANDREW CARNEGIE,
THOMAS M. CARNEGIE,
HENRY PHIPPS, Jr.

The business heretofore conducted by Carnegie Brothers & Co. having been purchased by this Association, will, on and after this date, be carried on under the laws relating to limited partnerships, under the name and style of

CARNEGIE BROTHERS & CO., LIMITED.
Thomas M. Carnegie, Chairman,
D. A. Stewart, Treasurer.

Pittsburgh, April 1, 1881.

The partnership existing between Andrew Carnegie, Thomas M. Carnegie and Henry Phipps, Jr., under the name of "The Lucy Furnace Company," was dissolved March 31, 1881. The undersigned, or either of them, will settle the business of the Company at their office, Thirty-third street, Pittsburgh.

ANDREW CARNEGIE,
THOMAS M. CARNEGIE,
HENRY PHIPPS, Jr.

The business heretofore conducted by the Lucy Furnace Company having been purchased by this Association, will, on and after this date, be carried on under the laws relating to limited partnerships, under the name and style of

CARNEGIE BROTHERS & CO., LIMITED.
Thomas M. Carnegie, Chairman,
D. A. Stewart, Treasurer.

Pittsburgh, April 1, 1881.

The partnership existing between Andrew Carnegie, Thomas M. Carnegie, Henry Phipps, Jr., and George Lauder, under the name of "Carnegie & Company," was dissolved March 31, 1881. The undersigned, or either of them, will settle the business of the firm at their office, Thirty-third street, Pittsburgh.

ANDREW CARNEGIE,
THOMAS M. CARNEGIE,
HENRY PHIPPS, Jr.,
GEORGE LAUDER.

The business heretofore conducted by Carnegie & Company will, on and after this date, be carried on under the laws relating to limited partnerships, under the name and style of

CARNEGIE BROTHERS & CO., LIMITED.
Thomas M. Carnegie, Chairman.
D. A. Stewart, Treasurer.

Pittsburgh, April 1, 1881.

Special Notices.

For Sale.

Nut, Bolt and Washer Machinery.

Two No. 2 headers, capacity 1-inch bolts hexagon and square down to ⅜ in. The only machine in use that can make collar bolts.
Two No. 3 nut machines, capable of making all sizes nuts, hexagon or square, ½-in. bolt size and under.
No. 2 nut machine for all nuts, hexagon and square, 1 in. and under.
No. 1 nut machine for 1½-in. nuts.
No. 1½ bolt cutters, double head, automatic stop.
No. ¾ bolt cutters, double head, automatic stop.
No. 1 washer machines for 2 in. washers and under.
No. 2 washer machines for ⅞ in. washers and under.
Bolt pointers, nut tappers, burring machines, circular shears and complete outfits for bolt and nut making—large assortment on hand.

J. NOYES SMITH established these manufactures in 1872, and all the machines built by him and ourselves, comprising over 100 in the United States and Canada, are in constant use to-day.

YORK & SMITH,
Manufacturers,
CLEVELAND, OHIO.

For Sale.

NAIL FACTORY,

Consisting of 50 Nail Machines, assorted sizes, all in good condition, with all necessary shafting, pulleys, grindstones and engine for driving same. Also, 2-high 18-inch muck train of latest pattern on planed bed plate.

The above can be seen at the mill of

J. W. FRIEND & CO.,
Thirty-fourth Ward, Pittsburgh.

For Sale.

Putnam Machine Co. Automatic Cut-off Engine, 13 x 36, band wheel, 10 ft. diameter, 21 inch face, in perfect order. Also, one 8 x 24 Side-spring Corliss engine.

E. P. BULLARD,
Dealer in *Machinery*,
14 Dey st., New York.

For Sale.

THE COLUMBIA FOUNDRY AND MACHINE WORKS.

Lot 220 ft. front, 198 ft. deep. Machine Shop 60 x 40, with Pattern Shop in second story, and Smith Shop 34 x 28, with Engine and Boiler rooms attached. Foundry 75 x 53, with two Cranes and Brass Furnaces; Brick Buildings, slate roofs Also, one Frame Pattern Warehouse, 48 x 28, slate roof. Drawings and Patterns for Blast Furnace and Rolling Mill work, Gas Works, Sugar Apparatus, Steam Engines and Machinery. Works established 1833. New Shops 1872. Shipments over competing Railroads. Undersigned have run the works continuously since 1870, and are doing a good business. Sale solely to dissolve partnership.

FERROTTET & HOYT,
Columbia, Pa.

For Sale.

In Michigan, Hardware, complete stock, no shop worn goods. A rare chance, and a delightful place to live. Small or large capital can be used. All particulars can be learned by addressing

S.,
Office of *The Iron Age*, 83 Reade St., New York.

ENGINE FOR SALE.

14 x 18
Erie City Iron Works Engine.
Good as New.

Address
JARECKI MFG. CO., ERIE, PA.

HARDWARE BUSINESS FOR SALE.—The undersigned offers for sale his entire interest and good will in his Hardware, Stove and Tinware business, situated in the city of Stockton, Cal. I have, confessedly, the best location, tools, stock and trade of any firm in like business in Stockton. I succeeded to the oldest-established business here, and wish to retire, solely on account of ill health and a desire to engage in farming. My books and papers are open to the fullest examination. For full particulars, address HOWARD H. HOGAN, Stockton, Cal., or N. S. ARNOLD & Co., 310 California St., San Francisco., Cal.

For Sale.

Patent and five full complete sets of patterns of

Box's Patent Universal Radial Drill Press.

See illustrated advertisement on page 50.

For Sale.

1650 tons Georgia C. B. Charcoal Pig Iron.
300 tons " H. B. " "
100 tons Manganese, 75 and 80 %.
For sale by NORRIS & BROTHER,
57 Second st., Baltimore, Md.

New Vertical Boilers—on Hand.

40 in. x 7 ft., 76 tubes, 42 in. x 7 ft., 90 tubes,
42 in. x 8 ft., 90 tubes, 44 in. x 8 ft., 104 tubes,
48 in. x 10 ft., 124 tubes, 30 in. x 6 ft., 50 tubes,
with base, grates, smoke dome and fixtures complete, ready to ship. Also, smaller boilers.

A. G. BROOKS & WINEBRENER,
261 N. 3d st., Philadelphia.

Wanted.

FOREMAN MOLDER

for large general foundry; a young man, if thoroughly competent, preferred.

H. R. IVES & CO., Montreal.

For Sale.

Stock of hardware, stoves and implements, and store furniture, in one of the best towns in Kansas.

Address HARDWARE,
Box 366, Salina, Kansas.

Special Notices.

NOTICE.

TO THE HARDWARE TRADE,
Retail and Wholesale.

Before buying, send to me for quotations. Will give special figures lower than market rates on a large line of Shelf Hardware and Tinware.

A. W. WHEELER,
141 Lake St., Chicago.

HAVE YOU READ THIS?
JENNINGS' DISCOUNT TABLES.
(2 % to 85 % and all the combinations.)

We find them correct and wonderfully "labor saving."—Sargent & Co., New York.
"Your discount tables are all you claim for them." T. W. Root, with Russell & Erwin Mfg. Co., Toledo, O.

Counting House Edition..... $2 00
Pocket Edition, Cloth Bound..... 1.00
Pocket Edition, Paper Covers..... .50

Currency may be sent by mail at publishers' risk.
Address, S. H. JENNINGS, Deep River, Conn.

SPECIAL OFFER TILL JULY 1st.

Don't Fail to Read It. From March 1st to July 1st I will send the three editions of my **Discount Book** to any responsible house in the United States, for **Examination**, with privilege of returning any or all of them, provided the party will pay the return postage, which would be thirteen cents on the counting House, and two cents each on the Pocket Editions. **Contents** of each edition are the same.
Please apply by **Postal** to

S. H. JENNINGS,
Deep River, Conn.

SPECIAL NOTICE TO ALL INTERESTED IN THE MANUFACTURE OF BOLTS.—U. S. Patent No. 146,374, dated Jan. 13, 1874, for Bolt Forging Machines, grants as one of the claims a link swinging rest a center to operate the side hammers or dies twice in each revolution of the crank shaft; and I hereby give notice that Messrs. S. C. FORSAITH & Co., of Manchester, N. H., are the only licensed builders in the U. S. to make and sell these machines; and I would caution all persons not to purchase Bolt Forging Machines having this motion of any one else, under penalty of legal steps being taken to secure my rights.

JOHN R. ABBE, Inventor, So. Windham, Conn.

LEIGH'S
DISCOUNT BOOK

Acknowledged by all the best work of the kind ever published. Price, by mail, **One Dollar.**
SPECIAL NOTICE.—This book will be cheerfully sent for **examination** or **comparison** to any responsible house requesting it, and return postage paid if book is not satisfactory.

Address, E. B. LEIGH,
St. Louis Elevator, St. Louis, Mo.

Hardware and Implement Dealers.

A most desirable agency for Threshers, Horse Powers and Engines, can be had in all territory not already occupied, by writing to
THE AULTMAN & TAYLOR CO., Mansfield, Ohio.
Correspondence solicited.
When you apply for agency, state where you saw this advertisement.

For Sale.

6 x 8 DOUBLE ENGINE, Link Motion.

Suitable for Mine, Furnace or Quarry hoisting. Good as new. Also Drums, Gears, &c.

A. G. BROOKS & WINEBRENER.
261 N. 3d St., Philadelphia.

TO IRON MANUFACTURERS.

For Sale.

The Rolling and Puddling Mills of the late Hudson River Iron Co., at Poughkeepsie, N. Y. These mills, with all the land west of the New York Central and Hudson River Railroad tracks and a large river front, are for sale. The Mills are in good condition for immediate occupancy. They contain all the machinery necessary for the manufacture of Merchant Iron, Rail and Bolt Spike, Bolts, &c., &c. A large portion of the purchase money may remain on the property. Parties in search of this kind of property are invited to examine it, and for other particulars to address

W. S. JOHNSTON, Trustee.
Poughkeepsie, N. Y.

For Sale.

LARGE SLOTTER, 6 ft. between Columns, 4-ft. Table, stroke 18 in., ind. cross and circular movements. A heavy, well-built tool; in first-rate order; will be sold low. Photo. on application.

A. G. BROOKS & WINEBRENER,
261 N. Third street, Philadelphia.

For Sale.

To close an estate. The MACHINERY, FURNACES, TOOLS, &c., of a Plate and Sheet Mill complete. Terms, one-third cash, balance long time if wanted. Address

THOS. B. McKILLIP,
72 Washington St., Chicago, Ill.

FOR SALE.

New Vertical Engines, 5 x 6, 6 x 6, 7 x 6, 12 x 12.
Second-hand Vertical engines, 4 x 6, 7 x 10, 8 x 8.
Second hand Horizontal Engines, 11 x 14, 12 x 24, 8 x 16, 15½ x 30, 4 x 8, 3½ x 8.
New Horizontal Engines, 7 x 12, 8 x 12, 10 x 12.
Full description of any of these on application.

A. G. BROOKS & WINEBRENER,
261 North Third St., Philadelphia.

For Sale.

Ten Double Acting Power Punching Presses, A1 order. Eight Single Acting Power Punching Presses, A1 order. Most of the double acting presses are the No. 3 Waterbury Press; the single acting, No. 2. One large Bliss & Williams Punching Press. One hundred and twenty-seven Foot Presses in A1 order, most of them square slides. Address, THE GEORGE PLACE MACHINERY AGENCY, 121 Chambers and 103 Reade sts., N. Y.

I AM PREPARED TO SELL FOR $6000 my American Patent No. 233,032 from October 5, 1880, for Molding Machines for Iron and Brass Foundries; the best and most improved machine of the kind. Patents for England, France, Belgium, Austria, Hungary, Italy have already been sold. A large number of those machines are already operating for a year in many foundries and German government factories. Can also be seen operating in my own foundry here.

GEORG SEBOLD, Kriegsstrasse 50,
Karlsruhe, Baden, Germany.

Wanted.

A Bessemer Chemist for a few months. One accustomed to superintending mixtures at the cupola preferred.

Address, with references,
STEEL,
Office of *The Iron Age*, 77 4th ave., Pittsburgh, Pa.

Wanted.

Competent foreman to take charge of the Missouri Valley Bridge and Iron Works, at Leavenworth, Kansas. None but men of ability, and experience need apply. Permanent position and good salary to competent man. Apply by letter at once, stating experience, references and salary required.

INSLEY, SHIRE & CO., Proprietors,
Leavenworth, Kansas.

Special Notices.

SECOND-HAND and NEW TOOLS FOR SALE LOW.

March List No. 2.

3 Engine Lathes, 18 in. swing, 8 ft. bed.
3 Engine Lathes, 18 in. swing, 10 ft. bed.
2 Upright Drills, 26 in. swing.
1 Pit Lathe, 32½ ft. swing, will turn a pulley as wide as 9 ft. face.
1 Pit Lathe, 16 ft. swing, will turn a pulley 30 inch face, with gear-cutting attachment.
3 Lathes, 21 in. swing, 8 ft. bed. Rod feed.
1 Engine Lathe, 26 in. swing, 12 ft. bed.
3 Foot Lathes.
5 Hand Lathes.
1 Horizontal Drilling Lathe, 24 in. swing, 10 ft. bed.
1 Hand Planer, 20 in. x 3 ft.
1 Dimension Planer, 24 in. x 18 ft.
1 Four-spindle Drill.
1 Boring Bar, 12¾ in. diam., 10 ft long, self-feeding.
1 Boring Bar, 9 in. diam., 8½ ft. long, self-feeding.
1 Forcing Machine, for forcing shafts off pulleys.
1 Steam Hammer. Cylinder, 11 x 36 in.
1 8x12 Horizontal Engine. New.
1 N. Y. Safety Power Co. Engine, 8x12.
2 McKenzie Cupolas, 4 ft. x 4½ inside.
Ladles, &c., &c.
7 Cranes.
2 Jig Saws.
2 Pattern Makers' Lathes.
5 Post Drills.
1 Boiler Punch, 18-in. throat.
1 Hand-lever Punch.
2 Hand Punches.
1 Trip Hammer. 100 lbs.
1 Bolt Pointer.
1 Cam Cutter.
1 Ellis Blind Slat Machine.
1 Pulley Polishing Lathe.
10 Double-acting Power Presses.
8 Single-acting " "
127 Foot Presses.
Lot of Forges, Old Lathes, Planer and Lathe, Tools, Mandrels, Blacksmith and other Tools. Wood Working Machinery.

For sale by

The Geo. Place Machinery Agency,
121 Chambers and 103 Reade Sts.,
NEW YORK.

THE NEW ENGLAND
Manufacturers and Mechanics Institute

ARE NOW ERECTING A PERMANENT EXHIBITION BUILDING, THE

LARGEST IN THE UNITED STATES,
AT BOSTON,

Containing OVER 8 ACRES of Floor Space.

Blank forms for APPLICATION to EXHIBIT at the first Annual Exhibition in the fall of 1881 can now be had by addressing the

New England Manufacturers and Mechanics Institute,
5 Pemberton Square,
BOSTON, MASS.

To Manufacturers and Hardware Merchants.

WANTED.

By a man of experience in positions of trust, who has a knowledge of the requirements of the export trade in American Hardware, having resided and traveled abroad for business, also held for several years past a responsible position in a manufactory, a new engagement as office man or travel to solicit trade and establish connections in foreign countries.

Address, ENTERPRISE,
Office of *The Iron Age*, 83 Reade Street, N. Y.

Wanted.

To Manufacture Machinery and Special Tools for the Railway Trade,

by an old established firm, with ample facilities.

Address, H. C. A.,
Office of *The Iron Age*, 220 S. 4th St., Phila., Pa.

Steam Engines Wanted.

Consignments of small engines and boilers wanted by a responsible machinery firm in Liberty street, N. Y.

Address P. O. Box 1012,
New York City.

HEAVY IRON WORKS WANTED.

An Eastern Manufacturing Company, doing a profitable business in heavy wrought iron structures, the manufacture and sale of which they control for the United States and Canada, wish to establish additional work, located in the West, South, Pacific Coast and Province of Ontario. Must have first-class freight advantages for receiving rolled structural and merchant iron. Address

WM. O. DOUGLAS, Binghamton, N. Y.

WANTED.

Young Englishman, with nine years' experience in Staffordshire sheet iron trade, Russian, Indian, Galvanizing and all other descriptions; thorough practical knowledge of sheet roll-turning for all classes of work; capable of taking charge of a forge; wishes to obtain a situation. Would be glad to accept as stocktaker or anything for a start. Good reference. Address, E.
Office of *The Iron Age*, 77 4th Ave., Pittsburgh, Pa.

WANTED.—Situation as Shipping Clerk, Timekeeper or Weighmaster for a Rail or Merchant Mill. No objection to going South or West. Address, WILLIAM,
Office of *The Iron Age*, 83 Reade St., New York.

Wanted.

An Experienced Founder

for Cold-blast Charcoal Furnace.

FRANK KING,
Van Buren Furnace,
Shenandoah County, Va.

FOR SALE.

Rolling Mill Machinery and Machinists' Tools.

One 9 in. Train; one 16 x 16 Upright Engine; one Horizontal Engine, 9 x 18; one Two-flue Boiler, 5 x 25 ft.; two One-five, 42 in. x 30 ft.; two pair Shears; one Roll Lathe; Floor Plates and Furnace Tools; one Screw-cutting Lathe, 30 in. x 14 ft.; one Lathe, 18 in. x 5 ft.; one Upright Drill, one Spike and one Fish Plate Machine; Shafting, Pulleys, &c. The above machinery will be sold in lots to suit purchasers.

H. C. BRIGGS, Globe Hotel, Syracuse, N. Y.

Special Notices.

New and Second-Hand
MACHINERY.

One Horizontal Corliss Engine, 250 h. p.
One Horizontal Engine, 15½ in. x 30 in. Todd & Rafferty.
One Horiz'l Engine, 9 in. x 12 in. Erie Iron Works.
One Horizontal Engine, 3 in. x 6 in.
One Portable Engine, 5 horse power
Portable Engines from 10 to 25 H. P.
Two Horizontal Return Tub. Boilers, 100 h. p. each.
One Hor. Tubular Boiler, 6 ft x 14 ft. 67 4-in. tubes.
Two Hor. Tub. Boilers, 4½ ft. x 13½ ft., 43 4-in. tubes
One Upright Tubular Boiler, 15 H. P.
One Locomotive Steel Boiler, 30 h. p.
One Lathe, 48 x 40 feet.

MACHINISTS' TOOLS.

One Lathe, 15 in x 6 ft. Shepard Lathe Co.
One Small Fox Lathe.
One Planer, 36 in. x 16 ft. Chain feed.
One Upright Drill, 32 in. Pond.
One Tapping Machine, 2½ in. Saunders' Sons.
One Tapping Machine, 6 in. Saunders' Sons.
One Tapping Machine, 1½ in. Saunders' Sons.
One Pipe Threader, 1 to 4 inches. Saunders' Sons, makers.
One Hydraulic Press, 8 inch ram.
One 300-ton Hydraulic Press and Pump.
One Bogardus Mill, No. 5.
One Bogardus Mill, No. 2.
One Sturtevant Blower, No. 2.
Three Vacuum Tanks, 6 ft. x 12 ft.
One Knowles Special Pump, No. 7.
One Hardick Pump, No. 6.
One Bliss & Williams Foot Press.
One Peck, Stow & Wilcox Foot Press.
A large stock of Shafting, Pulleys, Hangers and Miscellaneous Machinery,

J. GRAY'S MACHINERY DEPOT,
37 Dey Street, New York, U. S. A.

Illustrated Catalogue
OF
Hardware, Cutlery, &c.

We have issued a very complete work of this kind, embracing Hardware, Cutlery, Sporting Goods, Housefurnishing Goods, &c.; 1140 pages, with 5498 illustrations, also Lists, Tables, &c., making this book almost invaluable to Hardware Dealers. Price, $15, sent by mail.

Simmons Hardware Co.,
St. Louis, Mo.

L. SALOMON,
Importer of and dealer in
Upholsterers' Needles, Gilt Nails and Housefurnishing Hardware.
Agent for the Champion and Standard Knox Fluting Machines.
No. 10 Murray St., New York.

SECOND-HAND
DROP PRESSES
BOUGHT, SOLD & EXCHANGED.
BEECHER & PECK,
Lock Box 122, New Haven, Conn.

Europe.

Matheson & Grant's

Address is

32 Walbrook, London, England.

Engineers and Commission Agents for all business relating to engineering and metals in Europe.

Telegraph address,
MATHESON, WALBROOK, LONDON.

The Sherman Process Co.

9 Pemberton Square, Boston, Mass.,
Issue Licenses to use the Process for the Manufacture of Iron and Steel
In the Bessemer Converter, Crucible, Siemens-Martin, Puddling, Blast and Cupola Furnaces.
The use of this Process improves the quality of the product, saves fuel and labor, and does not require any change in furnace or manner of working
See page 17 of *The Iron Age* of Oct. 25th, 1877.

Bissell & Welles,
Wholesale Hardware Auctioneers,
83 Chambers and 65 Reade Sts., N. Y.
Sales held weekly for the trade. Consignments solicited. We refer to the leading Manufacturers and importers.

STEEL:
Its History, Manufacture, Properties, and Uses.
By J. S. JEANS,
Secretary of the Iron and Steel Institute.

Section I. *History of Steel:* Chap. 1. History of Steel; 2. Early History in England; 3. Progress of Invention; 4. History of Bessemer Process; 5. Siemens-Martin Process; 6. Other Steel-making Processes; 7. Steel in America; 8. Germany; 9. France; 10. Austria; 11. Russia; 12. Sweden; 13. Other Countries.—Section II. *Manufacture of Steel:* Chap. 14. Cementation and other Methods; 15. Manufacture by Bessemer Process; 16. Siemens-Martin Process; 17. Other Methods.—Section III. *Chemical and Physical Properties of Steel:* Chap. 18. Phosphorus in Steel; 19. The Use of Manganese; 20. Spiegeleisen; 21. Sulphur in Steel; 22. Silicon in Steel; 23. Tensile Strength of Steel; 24. Mechanical Tests of Steel; 25. Analysis of Steel.—Section IV. *Uses of Steel:* Chap. 26. Application of Steel to Railway Purposes; 27. To Shipbuilding; 28. To Bridge Building; 29. To General Purposes; 30. Guns and Armor Plates; 31. Other Purposes.
Price.....$14.50
For sale by
DAVID WILLIAMS,
83 Reade St., New York.

Sanderson Bros. Steel Co.
A limited number of shares for sale by
EDWARD FRITH & SON,
241 Pearl street, New York

Trade Report.

Office of THE IRON AGE,
WEDNESDAY EVENING, April 6, 1881.

More activity has prevailed in Wall steeet during the past week. In government bonds dealings were larger than for several weeks previous, characterized by a firm undertone. The 5s of 1881 advanced a fraction, while the 4s and 3½s were nearly, or quite, 1 per cent higher on the week's business. On the Stock Exchange there was a firmer tone, imparted by the advices from Washington in regard to the prepayment of bonds, leading to a general improvement, and on Saturday the closing sales were about the best of the week for a considerable part of the list. On Monday the bears made a raid on the coal stocks, with the effect of unsettling the market for these properties, but there was a partial recovery on the following days. A special feature was the sharp advance in Tennessees on receipt of intelligence of the passage of the Refunding bill, which converts the present bonds into 99 year 3 per cents., coupons receivable for taxes. The posted sales sterling exchange were advanced by leading drawers ½ a cent to $4.81½ for six day and $4.84 for demand bills. For loans on call at the Stock Exchange the ruling rate was 5 @ 6 per cent., exceptional loans being made as high as 1-32 of 1 per cent. per day, in addition to legal interest. The weekly bank statement showed a slight loss in the reserves. The April settlements caused less disturbance in the local money market than has been observed for several years, and as the money shipped from this point for the movement of produce will soon be restored, a protracted period of ease in financial circles is anticipated.

The importations of specie and bullion at this port during the week ending April 1, were $3,229,107, comprising $3,086,552 in gold and $142,555 in silver, as against a total of $5,281 for the week ending April 3, last year. The importations since the 1st of January and since the 1st of August compare as follows with the movement during the corresponding periods last year:

	Since January 1—	
	1881.	1880.
Gold	$13,033,070	$1,144,018
Silver	936,060	1,499,151
Total	$13,969,130	$2,643,169
	Since August 1—	
	1880-81.	1879-80.
Gold	$81,312,038	$76,171,990
Silver	3,407,411	4,476,665
Total	$84,719,449	$80,648,655

As noted in the general review, government bonds were strong, advancing to 115, but declining a fraction on later dealings. Southern State bonds continue their upward tendency, especially for Tennessee. On many of the railroads speculation halts, but is firm on mortgage bonds and incomes. The most active stocks of the week are the Western Union Telegraph, the coal stocks, Northern Pacific, Erie, Union Pacific, Milwaukee and St. Paul.

In the general trade of the city there is a fair movement, but scarcely up to the expectations of merchants, owing to the prevalence of storms and floods.

The following is an analysis of the bank totals of this week, compared with that of last week:

	March 26.	April 2.	Comparison.
Loans	$300,622,000	$300,288,100	Dec. $333,900
Specie	57,668,900	57,611,000	Dec. 57,900
Legal t'd'rs	12,034,500	12,710,500	Dec. 224,000
Tot. reserve	70,003,400	70,321,500	Dec. 281,900
Deposits	275,586,500	275,495,400	Dec. 91,100
Reserve required	68,896,625	68,873,850	Dec. 22,775
Surplus	1,706,775	1,447,650	Dec. 259,125
Circulation	16,630,500	18,713,500	Inc. 83,000

FOREIGN IMPORTS.

For the week ended April 2:

	1879.	1880.	1881.
Dry goods	$2,267,560	$3,082,653	$2,641,077
Gen. mdse	4,163,224	8,421,042	6,972,734
Total for week	$6,430,734	$11,503,695	$9,613,811
Prev. reported	70,683,674	113,666,707	99,446,611
Since Jan. 1	$77,114,458	$125,170,492	$109,060,422

Included in the imports of general merchandise for the week were articles valued as follows:

	Quantity.	Value.
Anvils	283	$3,910
Brass goods	31	4,351
Brass	..	11,060
Bronzes	18	4,351
Chains and anchors	70	3,520
Clocks	39	5,932
Copper	..	754
Cutlery	174	59,666
Pins	1	115
Gas fixtures	3	806
Guns	189	23,214
Hardware	21	4,229
Iron, pig, tons	4,074	67,983
Iron, sheet, tons	21	1,668
Railroad bars	7,452	77,355
Iron ore, tons	3,673	11,747
Iron, other, tons	1,932	47,157
Lead, pigs	1,600	7,733
Machinery	118	7,428
Metal goods	167	23,161
Ore	22	200
Needles	9	2,876
Nickel	6	2,175
Old metal	..	7,431
Platina	2	5,807
Plated ware	6	576
Saddlery	24	5,257
Steel	20,951	130,859
Spelter	54,508	2,126
Silverware	5	303
Tin, boxes	41,529	190,654
Tin, 1,648 slabs	168,810	36,769
Wire	17	3,079
Zinc	72,079	3,232

EXPORTS, EXCLUSIVE OF SPECIE.

For the week ended April 5:

	1879.	1880.	1881.
For the week	$6,754,971	$7,194,662	$9,044,878
Prev. reported	72,092,407	77,891,872	90,937,809
Since Jan. 1	$78,847,378	$85,086,534	$99,982,687

EXPORTS OF SPECIE.

For the week ended April 2:

Total for the week	$221,259
Previously reported	2,946,329
Total since January 1, 1881	$3,167,588
Same time in 1880	2,959,058
Same time in 1879	5,435,122
Same time in 1878	5,047,936
Same time in 1877	3,529,105
Same time in 1876	13,913,743
Same time in 1875	16,816,273
Same time in 1874	9,045,880
Same time in 1873	15,648,898
Same time in 1872	6,139,055

Government bonds at the close were quoted as follows:

	Bid.	Asked.
U. S. 6's 1881 registered	102½	102¾
U. S. 6's 1881 coupon	102½	102¾
U. S. 5's 1881 registered	100⅞	101
U. S. 5's 1881 coupon	102½	102¼
U. S. 4½'s 1891 registered	112⅝	112⅞
U. S. 4½'s 1891 coupon	112⅝	112⅞
U. S. 4's 1907 registered	113¼	113⅜
U. S. 4's 1907 coupon	113¼	113⅜
U. S. Currency 6s 1895	130	—
U. S. Currency 6s 1896	130	—
U. S. Currency 6s 1897	130	—
U. S. Currency 6s 1898	130	—
U. S. Currency 6s 1899	130	—

The stock market closed at a general advance of ⅛ @ ½, at the following quotations:

	Bid.	Asked.
Alton and Terre Haute	43	46
" " Pref	..	127½
American Union Telegraph	78	80½
Atlantic and Pacific Telegraph	47	48½
American District Telegraph	57¼	58
Arizona	4⅞	5
Burlington and Quincy	164¾	166
Clev., Col., Cin. and Indpls	88½	89
C. C. and I. C.	24½	25
Canada Southern	81	81⅛
Caribou	2	2½
Chicago, St. Louis and New Orleans	74	74⅜
Chesapeake and Ohio	25¼	25¾
" " 1st Pref	42	43
" " 2d Pref	31½	31¾
Chicago and Alton	135	140
Colorado Coal and Iron	56⅝	56¾
Central Pacific	87½	88
Cin., Sandusky and Cleve	60	60¾
Cedar Falls	23½	25
Delaware, Lack. and Western	121¼	121¾
Danbury and Norwalk	..	69
Deadwood	10	11
Delaware & Hudson Canal	111½	111¾
Denver and Rio Grande	106¼	106⅞
Erie and Western	52	54
Erie	47⅜	48
Erie Preferred	87	88
Excelsior Mining	5	5⅛
Excelsior	24	24½
Express—Adams	129½	130
" Wells, Fargo	118	118½
" American	75	76
" United States	58¾	60
Hannibal and St. Joseph	58¾	58¾
" Pref	103	103½
Houston and Texas	67	69
Homestake	26	27
Iron Mountain	65⅜	65½
Illinois Central	137¾	137¾
Indiana, Bloom. and Western	83¾	84
International and Gt. No	69	70¼
Kansas and Texas	46¾	46⅜
Louisville and Nashville	91⅝	91¾
Louisville, New Albany and Chic	70	72
Little Pittsburgh	3⅜	3½
La Platta	7½	9
Lake Shore	130⅜	130¾
Louisiana and Missouri	22½	..
Manhattan Beach	43½	44½
Manhattan Elevated	38⅜	38½
Michigan Central	112½	112¾
Maryland Coal	27	29
Metropolitan Elevated	113¾	114½
Mil., Lake Shore & West	46	46¾
Marietta and Cincinnati Pref	13¼	13½
" " 2d Pref	8	8¾
Mobile and Ohio	26¼	26⅜
New York Elevated	123	124
New York Central	145¾	146
New Central Coal	27½	29½
Northern Pacific	41⅜	43½
" " Pref	73⅛	73⅜
Nashville and Chattanooga	77⅞	78
New Jersey Central	100¾	100⅞
Northwest	123⅜	123½
" Pref	135	137
Ohio	43⅜	43¾
Ohio Central	30½	30¾
Omaha	42¾	43
" Pref	99	99⅜
Ontario and Western	36⅛	36⅝
Ontario Silver	36	37
Oregon Navigation	146	148
Pacific Mail	54¾	55
Panama	..	247½
Peoria, Decatur & Evansville	38	39
Quicksilver	18¾	18½
" Pref	66¾	66¾
Reading	63½	63¾
Rock Island	136⅝	137
Rome, Watertown and Odgenburg	26	28
Sutro Tunnel	1⅝	1⅝
Silver Cliff	5⅜	6
Stormont	2	2⅛
Standard	24	24½
San Francisco	41¾	42
" Pref	62½	63
" 1st Pref	95	96
St. Paul	112¼	112⅜
" Pref	123	123⅜
Texas Pacific	56	56¾
Union Pacific	119¾	119⅞
Wabash and Pacific	47¼	47½
" " Pref	90½	90¾
Western Union Telegraph	115¾	116
Western Union Telegraph, ex div.	80½	80½

MINING STOCKS.

The following were the closing quotations:

	Bid.	Asked.
Amie	48	50
Alice	7.25	7.62½
American Flag	27	30
Bell Isle	47	50
Bechtel	60	63
Bonanza C	29	31
Boston C	50	52
Calaveras	20	21
California	1.00	1.10
Climax	60	62
Consolidated Virginia	1.85	1.90
Consolidated Imperial	15	17
Consolidated Pacific	72	74
Chrysolite	6.12½	6.25
Cherokee	1.85	1.95
Dunkin	1.65	1.75
Dahlonega	7	8
Durango	16	18
Dardnelle	7.62½	7.75
Eureka C	25.50	....
Findley	31	32
Fa. DeSmet	10.50	11.50
Great Eastern	25	26
Gold Placer	42	....
Gold Stripe	....	3.00
Goodshaw	65	70
G. Prize	50	60
Granville	3	5
Hibernia	1.20	1.25
Hukill	1.00	1.05
Horn Silver	9.25	....
Independence	35	37
Iron Silver	3.75	3.90
Lacrosse	27	30
Leadville	1.20	1.25
Lucerne	11	12
Little Pitts	3.45	3.50
Mariposa	4.40	4.70
Mar. Pref	5.50	6.50
Moose	1.50	1.55
Navajo	1.10	1.15
N. Bell I.	33	35
Red Eleph	27	30
Rappah'k	12	13
R. Sun	2.90	3.00
Robinson	7.50	7.75
South Hite	55	70
S. Bulwer	....	20
Silver Cliff	5.50	5.62½
Spr'g Va!	2.50	3.00
Tioga	43	45
Tuscarora	10	12
Unadilla	13	14
Willshire	1.50	1.55

GENERAL HARDWARE.

There continues to be a fair demand for seasonable Hardware, but the wonderful tenacity with which winter still clings to spring prevents that general distribution which was expected about this time. With regard to values very few changes are reported, but in many lines of goods we hear of weakness and irregular figures.

The demand for foreign Hardware is light at present, but values are reported steady. Joseph Rodgers & Sons, Ld., have issued the following circular.

No. 6 NORFOLK STREET, SHEFFIELD.

DEAR SIRS: We beg to advise you that from and after this date the advance on Ivory Table Cutlery will be 25%, instead of 20%, as heretofore. We are also preparing a revised list of Stag Table Cutlery and Carvers, but until this comes out the old list will be used, and subject to an advance of 10%. We regret to be compelled to make these advances, but the great rise in the value of both Stag and Ivory during the past three months leaves us no alternative; and soliciting your continued favors, we are, Very respectfully yours,

JOSEPH RODGERS & SONS, Limited.

F. & W. Clatworthy, agents, 82 Chambers street, N. Y., April 1, 1881.

The inquiry for Nails has been more active this week, and some fair-sized orders have been placed. We continue to quote 10d. to 60d., $3 @ $3.10, net, according to quantity.

H. Burden & Sons, Troy, N. Y., issued a circular to the trade, under date of the 1st instant, in which they say: "We beg to inform you that our present prices and terms for Burden's Swaged Horse and Mule Shoes, of the latest improved patterns, are as follows: For 100 kegs in one order—Horse, 4¼ cents per pound, cash; Mule, 5¼ cents per pound, cash. Delivered free on board of cars or vessels here (Troy, N. Y.)"

The Rhode Island Horse Shoe Company, Durrie & McCarty, 97 Chambers street, agents, have issued the following circular:

PROVIDENCE, R. I., April 1, 1881.

To the Trade: We this season call your attention to our new pattern Extra Light Hind Horse Shoes, numbered 1, 2, 3 and 4. The frequent calls we have had for this class of Shoes have induced us to put them on the market. We believe that they will supply a demand that has long been made upon us by that class of horseshoers who are doing fine work. In size they correspond with the same numbers of our regular pattern, but are not so wide in the web or so thick. The advance in price of one-half cent a pound over our regular patterns is more than compensated by the larger number of shoes in a keg.

Size.	Weight, oz.
1 Hind	10
2 "	13
3 "	15
4 "	18½

RHODE ISLAND HORSE SHOE CO.

They have also, under same date, issued a circular from which we extract the following:

PROVIDENCE, R. I., April 1, 1881.

TO THE TRADE: The present prices for shoes of our manufacture are as follows:

	Cts. ℔ lb.
Perkins light, medium and heavy pattern Horse Shoes	4¼
Perkins extra light hind Horse Shoes	4¼
Perkins pattern Snow, Road or Trotting Shoes	4¼
Perkins pattern Mule Shoes	5¼
o and oo Mule Shoes	5¼
Jack Shoes	6¼

Free on board cars at the works at Valley Falls, R. I.

The discount on lots of 500 kegs and upward remains as before.

It will be observed that the figures quoted above for both Burden's and Rhode Island Shoes are f. o. b. rates at factory—the price from store here is 12½ cents per keg additional.

We have received the following announcement:

NEW YORK, April 5, 1881.

We beg to inform the Hardware trade that we shall keep a full stock of the goods of our manufactory, and continue the sale of them under our immediate supervision at 87 Chambers and 69 Reade streets, New York. UNION HARDWARE CO.

The office and warerooms of Flagler, Forsyth & Bradley, formerly at 87 Chambers street, have been removed to 298 Broadway, where they will continue to represent the same manufacturers as at their former place.

The attention of the trade is invited to the advertisement of the "Crown" and the "American" Ice Cream Freezers on page 34. These Freezers (manufactured by the American Machine Co., in Philadelphia), have some entirely new features, which are fully detailed in the advertisement. The "American" is said to have all the advantages of high-priced Freezers, but is cheaper on account of the simplicity of its construction. The "Crown" Freezer, it is claimed, has advantages not found in others, and is doubtless worthy the attention of buyers. Discount to the trade 40 per cent.

C. W. Dunlap & Co. have issued their 1881 catalogue and price list of Housekeeping Hardware, Mechanics' and Garden Tools, &c., which is a handsomely illustrated book of 50 pages, showing good assortments of Mincing Knives, Cake Turners, Sardine and Can Openers, Tack and other Hammers, Ice Picks, Fluting Scissors, Curling Irons, Lemon Squeezers, Cast-iron Bake Pans, Calipers and Dividers, Punches, Brad-Awl Blades, Gimlets, Cotton Hooks, File and Chisel Handles, Garden Tools and kindred goods. They have recently added to their specialties a line of Tanged Firmer Chisels and Gouges. All goods will in future be shipped from the factory, Nos. 249 to 253 Plymouth street, Brooklyn. The office and sample room in this city is at No. 85 Chambers street. We print below their revised discounts:

DISCOUNTS TO C. W. DUNLAP & CO.'S CATALOGUE AND PRICE LIST OF FEBRUARY 1, 1881.

	Discount.
Mincing Knives	20
Cleavers	20
Cake Turners	15
Kitchen Forks	20
" Knives	20
Bread "	25
Potatoe Mashers	10
Can Openers, Nos. 2, 3, 3½ and 4	25
Sardine Shears	20
Oyster Knives	20
Clam "	20
Carpet Hammers, Patent	25
" " Duplex	30
Upholsterers' Hammers	25
Carpet Hammers, No. 30	25
Tack Claws	25
Brad Hammers	25
Nail "	25
Carpet Stretchers	25
" " Handles	25
Saw Knives	15
Meat Saws	15
Steak Pounders	33⅓
Pinking Irons	20
Fluting Scissors	25
Pinching Irons	25
Curling Tongs	25
" Irons	25
Ice Picks	15
" Hatchets	15
" Pick Slideballs	15
" Mallets	15
" Tongs	15
Lemon Squeezers	20
Cork Screws	15
Wall Scrapers	25
Muddlers	20
Kitchen Tongs	25
" Stones	25
Vegetable Slicers	30
Clothes Poles	15
Ice and Snow Scrapers	25
Ham Tryers	20
Furnace Rakes	40
Lager Beer Extension	10
Cover Lifters	20
Pokers	20
Skewers	20
Bake Pans	15
Screw Drivers	15
Saw Sets	20
Cold Chisels	20
Nail Sets	20
Countersinks	30
Square Reamers	30
Screw Driver Bits	30
Chalk Line Reels	15
Marking Awls	25
Plumbers' Scrapers	20
Wing Calipers	40
In and Outside Calipers	40
Dividers	50
Compasses	25
Gas Plyers	15
Spring Punches	25
Saddlers Punches	25
Belt Awls	15
Brad Awls	10
Handled Brad Awls	10
Gimlets	33⅓
Gimlet Bits	33⅓
Bee Gimlets	25
" Bits	25
Box Scrapers	25
" Chisels	15
Hay Hooks	25
Merchandise Hooks	25
Cotton "	25
Cigar Knives	20
Cigar Box Openers	20
Solid Punches	30
Firmer Chisel Handles	20
Socket Firmer "	20
" Framing "	20
Brad Awl "	20
File "	20
Screw Driver "	20
Solder Copper "	20
Ferrules	25
Plane Handles	20
Saw "	20
" Screws	15
Rakes	50
Ladies' Rakes	50
Boys' "	50
Hoe "	50
Farmers' Hoes	50
Boys' "	50
Ladies' "	50
Weeding "	40
" Hooks	40
Garden Trowels	40
Transplanting Trowels	40
Weeding Forks	40
Scuffle Hoes	40
Edging Knives	40
Pruning Chisels	40
Garden Reels	40
Boys' Spades	40
Garden Spades	40
" Forks	40
Garden Sets	40
Boys' Garden Sets	40
Floral " "	40
Pruning Shears	25
Strawberry Sets	40
Rake and Hoe Handles	33⅓
Garden Sticks	40
Seaside Spades	25
Tinners' Mallets	10
Ring "	10
Bung Starts	20

SPECIAL NOTICE.

Customers desiring to pay immediate cash may make a further discount of 5 per cent. from these printed rates, provided only the payment is made on receipt of goods; otherwise we cannot allow this discount.

The L. M. Rumsey Mfg. Co., St. Louis, Mo., send us a large and very complete illustrated catalogue and price list of farming tools, pumps, foundry and railway supplies. The whole work comprises some 430 pages. The index alone takes nine and a half clearly printed pages. In agricultural implements the list is very full. The pump list embraces everything usually found in pump makers' catalogues, besides some novelties. Among the latter we notice some improved well-boring apparatus and a new and light machine for putting down driven wells. In wheelbarrows a large assortment is shown adapted to almost every conceivable use. The descriptive matter is unusually full, and taken in connection with the prices and tables of sizes, makes the work very valuable for reference. In the department of railway supplies we find lists of steam engines and steam pumps. Very good lines of steam fitters' and plumbers' goods are also shown.

The Star Lock Works, Philadelphia, Hillebrand & Wolf, proprietors, have just issued a revised edition of their illustrated catalogue and price list. The book, which is substantially bound in cloth, covers 61 pages, and is printed on extra heavy paper. The assortment of Trunk Locks shown is excellent, and as the cuts are all full size and the engravings first class, a very satisfactory estimate of the goods can be obtained from the catalogue. Among new goods in this line they show their "Champion" sample Trunk Lock, which is a very substantial looking Lock with thin flat Key; this Lock is protected by a patent issued in March last. Good assortments of Pad-Lock Hasps, Rim Dead Latches, Scandinavian Pad Locks, Key Blanks, Door Springs, &c., are also shown.

W. B. Belknap & Co., Louisville, Ky., have issued a catalogue and price list containing over 370 pages, in which they present a great many tables and lists that will be found very valuable to dealers in Iron and Heavy and Wagon Hardware, &c. Among the goods illustrated are Nails, Tacks, Rivets, Barbed Wire, Pliers, Post Hole Diggers and Augers, Horse Shoes, Toe

Calks, Bolts and Nuts; a large assortment of Blacksmiths' Tools, Bit Braces, Augers and Bits, Wrenches, Carpenters' Tools, Hammers and Sledges, Axes, Hatchets, Handles, Wheelbarrows, Wagon Materials, Carriage Hardware, Woodwork, &c. In their introductory circular they say: "We take pleasure in celebrating the fortieth anniversary of the establishment of our house by the issue of a new and greatly improved edition of our illustrated catalogue and price list. Commencing in April, 1840, under our present senior, Mr. W. B. Belknap, still actively interested in the management of the firm, we have been continuously at the head of the Iron, Steel and Heavy Hardware trade of Louisville, have grown with the growth of the city, and now, entering upon our fifth decade, may reasonably claim that forty years of honorable and successful dealing constitute the best guarantee and recommendation to the trade of our ability to serve and reward the patronage of the public."

Romer & Co., Newark, N. J., have recently added to their specialties Self-Locking Hand Cuffs and Leg Irons, and a good assortment of Lanterns, Wagon Lamps, Travelers' Pocket Lanterns, &c. They have just issued their 1881 catalogue and price list, in which illustrations of these goods are shown. Their assortment of Brass Spring Pad Locks is large and complete, and they also present a good line of Scandinavian or Jail Locks, Freight and Passenger Car Locks, &c.

A. E. Deitz illustrates, in an advertisement on the 29th page, a good pattern of Screen Door Latch, to which we invite attention. Durrie & McCarty, No. 97 Chambers street, are his agents.

BRITISH IRON MARKET.

[*Special Report by Cable to The Iron Age.*]

LONDON, April 6, 1881.

Scotch Pig.—Since our last cable report was published a good deal of speculation has been indulged in on the Glasgow market, consequently prices have been and are slightly sent up. The following are to-day's quotations:

Gartsherrie, alongside, Glasgow			58/6
Coltness	"	"	59/
Glengarnock	"	Ardrossan	53/
Eglinton	"	"	49/6

Lighterage from Ardrossan to Glasgow is 2/@ 2/6 per ton.

Manufactured Iron.—The market is dull with small demand. Prices are weak. Best Staffordshire Bars are quoted £7 @ £7. 10/.

Steel Rails.—The market is fairly active and prices steady. We quote ordinary sections unchanged, £6. 10/ @ £6. 15/.

Iron Rails.—Prices are steady, under a steady demand, with fair business doing. Welsh are quoted £5. 5/ @ £5. 10/.

Old Rails.—The condition of the market is unchanged; the offerings are moderate and sales small. Old Ts are quoted £4. 7/6.

Scrap.—Quotations nominal.

IRON.

American Pig.—The stagnation which for many weeks has characterized the Iron market is still its prominent feature, and transactions since we last went to press have been of a very trifling nature. Still, we do not hear of much Iron being piled up and no change in quotations is announced. We hear, however, of rather more pressure to sell, and the tone of the market lacks that buoyancy and strength that active business imparts. We repeat former quotations, viz.: Foundry No. 1, $25 @ $26; Foundry No. 2 X, $22 @ $23; Gray Forge, $20 @ $21.

Scotch Pig.—The demand for Scotch Iron is light, and prices are weak and in buyers' favor. A sale is reported of 300 tons Glengarnock on private terms. We quote Eglinton, $21.50; Carnbroe, $22; Coltness, $24 @ $24.50; Glengarnock and Gartsherrie, $22.50 @ $23. A sale of 500 tons of Middlesboro, No. 3, at $18 is announced.

Rails.—The market presents no new feature, and the only transaction we hear of during the week is a sale of 2500 tons English Steel for shipment at a private price. We quote nominally, Steel at mill, $62 @ $65, and Iron Rails, $48 @ $50.

Old Rails.—In the absence of business, we quote nominally, Ts, $27 @ $27.50; D. H., $28 @ $29.

Scrap.—We quote No. 1 Wrought, $30 @ $31 from yard, which is the nominal price.

METALS.

Copper.—The market has been quiet; some small lots of Lake Superior, held by speculators who did not want to carry them, have been sold at 19¢, and in some exceptional instances even as low as 18⅞¢, but the large companies are out of the market and decline to sell even at 19¼¢. For smaller lots the lower prices might be obtained, but the large quantities could probably not be placed at that figure. We quote at the close Lake Copper 19¢ @ 19¼¢, and Baltimore 18⅝¢ @ 18¾c. The cable announces no change at London. Manufactures remain as under: Bottoms, 29¢; Braziers, according to size, 28¢ @ 34¢; Circles, 31¢ @ 34¢; Segment Sheets, 31¢; Fire-box Sheets, 28¢; Sheathing, 26¢, and Bolt Copper, 28¢.

Tin.—Our market has developed considerable activity, with higher prices, as was generally anticipated. The jobbing demand is excellent, consumers buying freely, and besides this, there have been sales of 250 tons Straits, on the spot and to arrive, at 20⅛¢ @ 20¼¢. Our stock is decreasing steadily, as exhibited by the ensuing statement, drawn up by Mr. Charles Nordhaus, 17 Cedar street, New York:

	Tons.
Stock of tin March 1	3,100
March arrivals	425
	3,525
March consumption	1,000
April 1, stock in the United States	2,525
Afloat from the Straits, at New York and Boston by four vessels, due April 13 to June 25, tons	225
To be shipped for New York by steamer in April, May and June, tons	650
	875
Visible supply	3,400
Probable stock May 1, 1881	1,900
" " June 1, 1881	1,100
" " July 1, 1881	600

London cables straits, £89. 10/ on the spot, and Singapore cables £93 cost and freight, both markets being strong. The March deliveries are cabled from Europe: 1100 tons in England, and 800 tons in Holland, and adding thereto the above American deliveries of 1000 tons, we have an aggregate passed into consumers' hands of 2900 tons; while the exports from the East Indies in March did not exceed 1800 tons, the position of tin, in view of this comparatively moderate supply and increasing consumption, is therefore felt to be a firm one. We quote at the close large lines straights 20⅛¢ @ 20½¢, English 20¼ @ 20½¢, and Australian and Billiton 20⅜¢. *Tin Plates*—since our last report have been quiet, but firmer. They are firm in England, and Liverpool cables Coke 16/. According to mail advices meanwhile received from Wales, the strike there was going on without any prospect of a settlement. Twenty-eight works have stopped working, and others are under notice; consequently a strong market is anticipated over there for some time to come, and in accordance with this sentiment makers ask 6d. advance on one month's delivery, and 1/ for two months. The only drawback we can perceive on this side as to trade in the article is the state of the weather here and in the West. We quote at the close, large lines, ordinary brands, per box, : Charcoal Bright, $6 @ $6.25; ditto Ternes, $5.50 @ $5.62½. Coke Tin, $5 @ $5.25, and ditto Ternes, $5 @ $5.12½.

Lead.—The market has become more active and firmer, sales being reported of 1000 tons Common Domestic, in small lots, at prices ranging from 4.62¢ upward to 4.75¢. At the close 4.75¢ is bid without sellers, and there is a probability of higher rates, as it is understood that the agents of the Richmond company, who hold about 2000 tons in this city, decline to sell for less than 5¢, and that the representatives of the Eureka mine are exhibiting a similar tendency. Advices have also been received that the fires of the Omaha smelting works have been extinguished by the flood of the Missouri River, which will possibly stop refining in that establishment for some time to come. Inquiries from consumers are becoming more numerous, while the stocks held here are not large. In Refined nothing has transpired; the market is very dull, there being no offerings, while at the West there is a good inquiry with small stocks. We quote here $4.85 @ $5. Manufactures are quoted as follows: Sheet Lead, 7¢; Lead Pipe, 6½¢; Tin-lined ditto, 15¢, and Block Tin Pipe, 40¢.

Spelter and Zinc.—Great dullness continues to be the order of the day in Common Domestic. We therefore maintain the nominal quotation of 5¢ @ 5¼¢, while Silesian is unaltered at 5⅜¢ @ 5½¢. Sheet Zinc is worth 7¢.

Antimony.—The demand for this metal is restricted for the moment. We quote: Johnson, 14¼¢; Hallett, 14⅜¢, and Cookson, 14⅝¢.

OLD METALS, PAPER STOCK, &c.

The purchasing prices offered by dealers are as follows:

Copper, heavy	₽ lb.	$0.16	@	$0.17
Copper Bottoms	"	.11	@	.14½
Yellow Metal	"	.09	@	.09½
Brass, heavy	"	.11½	@	.12½
Brass, light	"	.09	@	.09½
Composition, heavy	"	.13½	@	.14½
Lead, heavy	"	.03½	@	....
Tea Lead	"	.03½	@	....
Zinc	"	.03¾	@	.03½
Pewter, No. 1	"	.14	@	.14½
Pewter, No. 2	"	.08	@	.09
Wrought Iron	₽ ton	24.00	@	25.00
Light do	"	11.00	@	12.00
Stove Plate	"	12.00	@	13.00
Machinery do	"	15.00	@	16.00
Grate Bars	"	7.50	@	8.00

The prices current for Rags, &c., are as follows:

Canvas, Linen	₽ lb.	3½c.	@	4 c.
White Cotton, New	"	3½c.	@	....
" No. 2	"	2½c.	@	....
White, No. 1	"	4¼c.	@	4¾c.
" No. 2	"	2¾c.	@	2¾c.
Seconds	"	1 c.	@	1¼c.
Soft Woolens	"	8½c.	@	9¼c.
Mixed Rags	"	2c.	@	2½c.
Gunny Bagging	"	1¾c.	@	....
Jute Butts	"	2c.	@	2¼c.
Kentucky Bagging	"	3c.	@	....
Book Stock	"	2½c.	@	2¾c.
Newspapers	"	1½c.	@	1¾c.
Waste Paper and Scraps	"	½c.	@	¾c.
Kentucky Bale Rope	"	4c.	@	....

COAL.

The companies report a dull trade generally, but we learn that the Pennsylvania Coal Company, working on half time, have more orders than they can fill. The belief is commonly expressed in Coal circles that the plan for a restricted production will be adhered to, if found necessary to sustain circular prices, though the prominent managers decline to speak definitely. Report says that, in some instances, sales are made below the circular rates. It cannot be conceded that the recent official announcements have failed to import that tone and steadiness which had been hoped for; on the contrary, the slight concession made, as remarked by one in full sympathy with the movement, "is construed as a weakening of the market;" but half time is expected to effect a cure. It is very apparent that buyers still keep aloof, looking for what they call "bottom figures." Nevertheless, some speak of the market as showing a slight improvement, compared with one week ago. The more common remark is that no change is perceptible.

In bituminous Coals prices are reported about the same, viz: Cumberland, at Baltimore, $2.50, at New York, $4.85; Clearfield, at Baltimore, $3.50; at New York, $4.85, at South Amboy, $4.60.

Lehigh is quoted, $4 @ $4.40 for lump, $4.25 @ $4.35 for grate, egg and stove, and $3.90 @ $4 for chestnut. The free-burning coals are $3.90 for egg and grate, $4.05 @ $4.15 for egg, $4.20 @ $4.35 for stove and $3.90 @ $4 for chestnut. Coals at Rondout and Newburg are slightly under these figures for most qualities.

The Coal product of the Schuylkill region for the week ending March 26, was 77,134 tons, as against 120,210 tons for the week previous, and 93,741 tons for the corresponding week of last year. The total product for the week was 373,453 tons, against 359,400 tons for the same week of last year, an increase of 14,053 tons. The output for the year so far is 5,771,319 tons, against 4,432,436 tons for the corresponding period of last year, an increase of 1,338,883 tons.

Freights are a little firmer, as vessels go South at current low rates. We quote $1.15 to Boston, 80¢ to Providence and Fall River, 60¢ to New Haven.

EXPORTS

	Quan.	Val.
Dutch West Indies.		
Sew. ma., cs..	1	$18
Dutch East Indies.		
Ptlm., gals.	410,500	50,000
Hamburg.		
Ag. imp., pkgs	791	16,622
Guns, cs	2	240
Iron, box	1	800
Clocks, bxs	51	627
Pump	1	598
Copper, cks	54	10,760
Hdw., cs	199	5,486
Mach'y, cs	39	7,858
Sew. ma., cs..	17	756
Ptlm., gals.	218,149	21,124
Mf. iron, pkgs	191	800
Revolvers, cs.	5	2,305
Dantzic.		
Ptlm., gals.	144,342	13,000
Stockholm.		
Pumps, pkgs.	3	150
Bremen.		
Mf. iron, pkgs	5	175
Mach'y, bxs..	2	15
Steel, pkgs	54	50
Ptlm., gals.	427,808	40,700
Ag. imp., pgs	165	7,482
Hdw., pgs	16	369
Rotterdam.		
Ptlm., gals.	239,701	19,200
Ag. imp., pkgs	12	244
Tin dross, bbls	4	252
Hdw., pgs	11	242
Clocks, cs	28	731
Amsterdam.		
Pumps, pkgs.	7	500
Ag. imp., pkge	1	32
Barrow.		
Clocks, bxs..	115	1,478
Antwerp.		
Wire, cs	2	287
Hdw., cs	38	1,102
Ptlm., gals.	449,639	35,500
Ag. imp., pkgs	14	642
Sew. ma., cs..	21	450
Liverpool.		
Ag. imp., pkgs	666	24,125
Mach'y, cs	768	14,061
Hdw., cs	34	2,538
Steel, pkgs	39	1,250
Mf. iron, pkgs.	11	377
Sew. ma., cs..	5	105
Nckl. mtl., bbl	59	2,600
Clocks, bxs	180	4,759
Pumps, pkgs.	3	100
Arms, cs	2	540
Tinware, cs..	66	930
Metal cs	3	1,000
Pistols, cs	4	600
Glasgow.		
Clocks, bxs..	38	539
Hdw., pkgs	32	408
Iron rollers, cs	5	1,000
Mf. iron, pkgs	100	3,000
Ag. imp., pkgs	3	400
British North American Colonies.		
Pig iron, tons.	120	1,800
Hdw., pkgs	12	392
Mf. iron, pgs..	11	158
Ptlm., gals.	2000	340
British Possessions in Africa.		
Pumps, pkgs.	5	203
Ptlm., gals.	10,000	1,540
Hdw., pkgs	203	3,320
Ag. imp., pkgs	82	783
Mf. iron, pkgs	65	500
London.		
Clocks, pkgs..	470	10,594
Ag. imp., pkgs	62	2,688
Mf. iron, pkgs	13	414
Arms, cs	4	86
Ptlm., gals.	282,465	28,985
Hdw., pkgs	99	2,224
Mach'y, cs	2	915
Nails, cs	7	58
Cutlery, cs	4	52
Sew. mach., cs	75	2,177
Bristol.		
Clocks, bxs..	18	240
Hull.		
Mach'y, pkgs.	109	3,303
Ag. imp., pkgs	206	5,076
Hdw., pkgs	10	221
Ptlm., gals.	118,540	10,225
Clocks, bxs	4	76
Cork.		
Ptlm., gals.	66,901	5,863
British Guiana.		
Ptlm., gals	1000	175
Nails, kegs	10	45
Hdw., cs	4	70
Sew. ma., cs..	6	227
British Australia.		
Ptlm., gals.	114,927	17,109
Hdw., cs	707	15,921
Cutlery, cs	16	631
Mf. iron, pkgs	59	1,738
Mach'y, pkgs.	99	7,449
Tin plate, cs	50	308
Locomotives	2	15,000
Tinware, cs	5	189
Firearms, cs.	1	300
Clocks, pkgs..	178	3,309
Sew. ma., cs.	253	8,351
Ag. imp., pkgs	145	3,809
Wire, reels	451	5,079
Nails, kegs	30	226
Pins, case	1	195
Iron safe	1	300
Pumps	23	2,000
British East Indies.		
Ptlm., gals.	703,000	83,827
New Zealand.		
Ptlm., gals.	28,800	3,990
Wire, coils	409	3,977
Pumps, pkgs.	18	690
Mach'y, cs	12	1,800
Bell	1	100
Hdw., cs	171	3,637
Ag. imp., pkgs	72	1,339
Nails, cs	12	232
Mf. iron, pkgs.	15	380
Clocks, bxs	39	540
Havre.		
Sew. mach., cs	19	983
Ag. imp., pkgs.	1018	27,281
Mach'y, cs	8	1,915
Hdw., cs	1	83
Bordeaux.		
Ag. imp., pkgs	97	3,000
Marseilles.		
Ptlm., gals.	50,000	5,940
British West Indies.		
Mf. iron, pkgs	39	386
Sew. ma., cs..	8	132
Fountain	1	38
Ptlm., gals.	33,531	3,912
Nails, kegs	128	523
Hdw., cs	49	452
Ag. imp., pgs.	10	56
Mach'y, pkgs.	25	1,336
Tinware, cs	3	46
Cuba.		
Mf. iron, pkgs.	1169	8,590
Pumps, pkgs.	4	68
Clocks, cs	5	246
Cutlery, cs	9	393
Ptlm., gals.	12,560	1,763
Iron safe	1	75
Iron tubes, bdl	18	110
Iron, pkgs	110	1,035
Mach'y, pkgs.	96	4,606
Hdw., pkgs	242	4,977
Copper, plates	2	271
Tinware, cs	4	61
Ag. imp., pkgs	39	686
Grindstones	130	87
Sew. ma., cs.	61	1,635
Nails, kegs	587	2,031
Locomotive	1	12,000
Zinc, pkgs	17	82
Windmills, pgs	22	148
Glue, bbls	2	68
Nails, hhds	4	139
United States of Colombia.		
Sew. ma., cs.	110	2,663
Steel, pkgs	72	1,106
Clocks, cs	12	462
Br. goods, cs.	2	144
Elect. app., cs	1	50
Hooks, cs	16	2,119
Iron, pkgs	109	239
Pumps, pkgs.	14	296
Tinware, cs	6	124
Iron bridge	1	5,450
Met. goods, cs	2	315
Lead pipe, cs.	6	61
Nails, bxs	3	87
Mach'y, pkgs.	167	9,914
Ptlm., gals.	4500	707
Cutlery, cs	96	3,393
Iron safes	3	117
Nails, kegs	30	122
Cartridges, cs.	4	93
Copper pans.	2	138
Arms, cs	2	121
Hdw., pkgs	172	4,091
Mf. iron, pkgs	416	4,064
Zinc, cks	8	355
Steamboats	2	28,000
Guns, cs	15	698
Mexico.		
Mf. iron, pkgs.	979	2,778
Cutlery, cs	17	375
Clocks, bxs	27	727
Pumps, pkgs.	12	1,130
Sew. ma., cs.	190	4,145
Per. caps, cs.	6	182
Arms, cs	7	769
Boiler tubes	25	49
Tinfoil, cs	2	71
Tanks, pkgs	243	1,575
Ptlm., gals.	32,750	4,142
Nails, kegs	221	849
Cartridges, cs.	3	43
Ag. imp., pgs.	140	1,617
Mach'y, pkgs.	60	5,170
Hdw., cs	98	1,456
Revolvers, cs.	2	1,000
Pistols, case	2	833
Shot, cs	20	118
Tinware, cs..	3	52
Brazil.		
Ptlm., gals.	20,000	2,640
China.		
Cartridges, cs.	7	220
Arms, cs	2	60
Rifles, cs	3	60
Hayti.		
Ptlm., gals.	17,016	2,080
Iron safe	1	95
S. nails, cs	4	45
Sew. ma., cs.	65	803
Ag. imp., pkgs	4	93
Hdw., pkgs	122	1,106
Nails, kegs	211	719
Iron, pkgs	96	140
Mach'y, pkgs.	11	149
Cutlery, cs	5	270
Iron tank	1	100
Iron bars	56	131
Mf. iron, pkgs	27	527
Tin plate, bxs.	25	144
Canary Islands.		
Clocks, cs	6	141
Hdw., cs	43	477
Ptlm., gals.	23,800	2,977
Ag. imp., pkgs	12	76
Tinware, cs..	9	119
Tarragona.		
Ptlm., gals.	216,530	19,540
Venezuela.		
Cop. wire, bbl	1	75
Clocks, cs	9	140
Ag. imp., pkgs	8	69
Ptlm., gals.	13,553	1,521
Hdw., cs	30	336
Sew. ma., cs..	6	214
Cutlery, cs	3	107
Nails, bxs	14	190
Uruguay.		
Ptlm., gals.	90,000	10,475
Ag. imp., pgs.	32	417
Nails, pkgs	10	186
Shoe nails, bxs	50	300
Sew. ma., cs.	38	635
Clocks, cs	7	194
Hdw., cs	23	560
Argentine Republic.		
Tinware, cs..	1	75
Hdw., cs	18	525
Ptlm., gals.	20,000	2,500
Valencia.		
Ptlm., gals.	30,000	3,100
Chili.		
Ptlm., gals.	57,500	7,025
Nails, kegs	1446	4,571
Hdw., cs	222	3,041
Pumps, pkgs.	6	601
Arms, cs	3	598
Sew. ma., cs..	6	197
Cutlery, cs	2	89
Mf. iron, pkgs	51	667
Cartridges, cs	6	136
Ag. imp., pkgs	71	2,057
Tacks, bxs	46	471
Bilboa.		
Ptlm., gals.	146,700	11,740
Oporto.		
Ptlm., gals.	341,813	27,842
Alexandria.		
Ptlm., gals.	336,360	37,490

IMPORTS

Of Hardware, Iron, Steel and Metals into the Port of New York, for the Week ending April 6, 1881:

Hardware.

Alexandre F. & Sons, Rivets, cs., 1
Comp. pipe, cask, 1
Filters, cs., 2
Nuts and bolts, cs., 1
Fish plates, bdls., 3
Bloomfield J. C. & Co. Mach'y, case, 1
Boker Hermann & Co. Casks, 2
Cases, 21
Brown, Ward & Ringman, Mach'y, cs., 5
Mach'y, pkgs., 12
Carr & Hobson, Plow, 1
Coleman Dr. A. G. Machine, case, 1
Degraw, Aymer & Co. Chains, cks., 4
Chains, lengths, 5
Drexel, Morgan & Co. Files, case, 1
Cases, 4
Duval H. R. Packages, 19
Field, Alfred & Co. Nails, cask, 1
Hardware, cask, 1
Hardware, cs., 2
Wire, cask, 1
Frasse & Co. Casks, 2
Gilbert, Potter & Co. Anchor and chain
Graef Cutlery Co. Cutlery, cases, 10
Hall, Nicoll & Granberry, Case, 1
Hartley & Graham, Packages, 10
Howard Bros. & Reed, Packages, 3
Howard & Co. Cases, 7
Laribee E. L. & Co. Sewing mach., cs., 1
Moore's J. P. Sons, Cases, 3
Rogers H. Cases, 5
Steiner Bros. & Patterson, Case, 2
Taylor Thomas, Package, 1
Wiebusch, Hilger & Co. Packages, 23
Winchester Arms Co. Packages, 3
Wright Peter & Sons, Axes, cases, 5
Order, Cases, 12
Casks, 2

Iron.

Alexandre F. & Sons, Bundles, 12
Girders, 30
Corbin P. & Co. Pig, tons, 100
Drexel, Morgan & Co. Ore, tons, 221
Giesenheimer & Co. Casks, 25
Lee, James & Co. Pig, tons, 200
Millikin & Smith, Wire, bdls., 1396
Morgan W. D. Gal. wire, cs., 12
Vom Cleff & Co. Ironware, cs., 7
Williamson Jas. & Co. Pigs, tons, 100
Wolff N. & Co. Ironware, cs., 13
Order, Pig, tons 4121
Barytes, tons, 85
Spiegeleisen, kilos., 500,000
Spiegel, tons, 700
Spiegel, 72
Wire rods, bdls., 931
Barrel hoops, bdls., 100
Cross ends, tons, 334
Ore, tons, 690
Rails, 2570
Crop ends, tons, 100

Steel.

Baring Bros. & Co. Blooms, 350
Brown William, Box, 1
Case, 1
Bundles, 166
Carey & Moen, Bessemer wire rods, bdls., 331
Lee James & Co. Blooms, 1447
Woodford W. O. Bundles, 263
Cases, 12
Bars, 70
Order, Blooms, 3800
Casks, 5
Plates, cases, 5
Strips, cks., 12
Bundles, 13
Cases, 35
Casks, 3
Rods, bdls., 1257
Old. D. H. rails, pcs., 3304
Rails, 389
Scrap, tons, 40

Metals.

Alexandre F. & Sons, Cop. sheets, rolls, 16
Copper, bdls., 6
Byrne, Jos. & Co. Tin plates, 3557
Laidlaw & Co. Lead, bars, 3163
Michelina S. Old metal, pkgs., 2
Noel August, Tin plates, cs., 9
Phelps, Dodge & Co. Tin plates, bxs., 5030
Black Taggers, 15
Stone T. & Co. Copper rollers, cs., 3
Wittleman Bros. Metallic caps, cs., 30
Tinfoil, cs., 1
Willett & Hamlin, Yel. metal, cs., 150
Order, Tin, bdls., 10
Tin, ingots, 600
Tin plates bxs., 39,755
Nickel, cs., 2
Tin, ingots, 600

PHILADELPHIA.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, April 5, 1881.

Pig Iron.—Business in the Iron trade has been dull and dragging during the greater portion of the week, but there has been no difficulty in maintaining prices for all good brands. The absence of inquiry for large lots and the indifferent attitude of consumers appear to be a disappointment to many, and for the time being discourage the idea of further improvement in prices. The cost of production has been increased, however, and more than offsets the slight gain in prices obtained during the past three months. Furnacemen complain a good deal; many assert that they are barely getting cost, while others say that at present prices there is a positive loss in making Pig Iron. In any case, while the chances of an advance are not very flattering, the probabilities of a decline appear to be equally remote. Furnaces will begin to blow out for repairs, &c., (several in the Lehigh region at an early date), but very few will be "blown in" so long as the present outlook continues, so that the by no means over-abundant supply is likely to be decreased rather than otherwise. Taking the position all through, however, it appears to be satisfactory as regards the amount of business doing, but as regards prices, complaints are universal and it is not easy to find a remedy. Labor at mines and furnaces and fuel and freights have reached a point at which it is impossible to make cheaper iron, while a general advance in prices (even if possible) might, by opening the market to foreign competition, lead to still greater difficulties in the future. Under these circumstances ironmasters take a very conservative position. Present prices are as low as they can afford to accept, but on the other hand, as we have said, they realize that higher figures would be very unsafe so long as foreign markets are in their present position. What shape the markets will assume in the long run seems to be a complete enigma. What appears to be sound and strong arguments may be given against a decline, and equally strong and sound reasons against an advance. Under these circumstances the turning point may be still in the future. Crop prospects may have a good deal of influence. We incline to the idea of higher prices for Iron if the country is favored with bounteous crops, but not otherwise. We notice that the English market is steadying up under anticipations of a good harvest, although the agricultural interest there is insignificant compared with our own. An unusual degree of interest is therefore manifested in reports from the West, and the extraordinary weather of the past ten days has undoubtedly had a considerable and not favorable influence on all kinds of business. In the meantime, although there is an appearance of dullness and inactivity, furnaces have all they can do to fill orders, and up to midsummer, with very little new business, are believed to have secured a steady outlet for their entire products. Prices are unchanged and steady: No. 1 Foundry at $25 @ $26, and for a few special brands, $26.50; No. 2 is dull and easy at $22 @ $23; Gray Forge, $20.50 @ $22.50—good brands scarce; Mottled and White, $19 @ $20, quiet.

Foreign Iron.—Bessemer.—The market is unsettled and irregular, although consumers show more disposition to buy when they can secure suitable grades at $25 or less. A sale of 2000 tons in store was closed a day or two ago at something over $25, and a 5000-ton lot for shipment at $25, and a slight advance offered for another 5000-ton lot. The market abroad is unsettled, and bids for large lots are sought for with a good deal of urgency, although if the demand from this side continues, the tone of the market may change very suddenly. English Iron is rather quiet, and buyers are not willing to repeat offers made last week. Stocks here are not important, however, and holders appear to be firm at about $18 @ $18.50, according to quality. Scotch Iron is very dull; nothing whatever doing except in a retail way. Eglinton at $22, and Gartsherrie $24 @ $25.

Muck Bars.—The demand is something better than it has been, and sales have been on a larger scale and at better prices on the average transactions. In some cases $38 at mill has been accepted, but a good deal of business was taken at $38.50, and holders are standing out for $38.50 as an inside figure for the best refined bars.

Blooms.—A fair demand is reported at last week's prices. The Forges are generally pretty well sold up, and there are very few good blooms offering at present. We quote: $65 per ton of 2464 lbs. for Charcoal; $55 for Anthracite, and $47.50 @ $50 for Scrap Blooms. Ore Blooms nominal, at $42.50 @ $45.

Structural Iron.—The demand is a trifle better, but outside of one or two large orders for bridge work, we have not heard of anything new coming on the market, although the general trade is fair and sufficient to keep the mills pretty well employed. We understand that orders for 4000 or 5000 tons of Bridge Iron will be placed in course of the week, with prospects of more to follow. The arrangement among manufacturers to make uniform prices on Beams and Channels has not held together very satisfactorily, and 3.25¢ is probably only a nominal rate. Angles are steady at 2.6¢, and Tees about 2.9¢ @ 3¢.

Bar Iron.—There is very little change to report in any respect. Business is good, and both merchants and manufacturers find themselves fully employed in meeting the current demand. We have not heard of any specially large orders being offerred, but consumption is so large that the trade in all its departments has an active and healthy appearance. Prices, as we have said before, are not what they ought to be, but in course of a few weeks, it is hoped, will improve. In the meantime 2.35¢ @ 2.4¢ at mill, and 2.5¢ from store appear to be the general quotations for Refined Iron. Market steady.

Plate and Tank Iron.—The past week has brought only a moderate amount of business, chiefly in connection with bridge work. There is a fair demand for lots of 20 to100 tons each, but the aggregate of the week's sales has not been such as to extend far into the future. Prices are very irregular; manufacturers who happen to have plenty of orders on hand are firm at full quoted rates, while others who have almost finished their contracts are disposed to make concessions sooner than lose a good-sized order. For ordinary lots we quote 2.75¢ for Tank, 3.25¢ for Refined Iron, 3.50¢ for Shell, 4.75¢ for Flange, and 5.75¢ for Fire-Box.

Sheet Iron.—Manufacturers appear to have all the business they desire, and the majority have probably larger contracts to fill than ever before. Some of the leading concerns inform us that they have orders already sufficient to employ them for many weeks to come, and inquiries are still coming in from heavy buyers. There is no change in prices, however, which are steady as follows, viz.:

Common Sheet, No. 26 to 28	4¼¢
Common Sheet, No. 22 to 25	4 ¢
Common Sheet, No. 16 to 21	3¾¢
Best Refined ¼¢ @ ½¢ advance on the above.	
Best Bloom Sheets, No. 26 to 28	6¼¢
Best Bloom Sheets, No. 22 to 25	6½¢
Best Bloom Sheets, No. 16 to 21	6¼¢
Common Red Plates, 3-16 to 16	3.2¢
Blue Annealed, 3-16 to 16	3.4¢
Best Bloom Galvanized, discount	35 %
Second quality, discount	45 %

Steel Rails.—The market is firm, and would be active if sellers had anything to offer, but as buyers are already aware that orders for quantities cannot be placed, they are not making much effort to get in. In point of fact, large sales months ago, for spring deliveries, imply that leading buyers anticipated their wants, and it is scarcely probable, therefore, that transactions will be as large in the immediate future as they have been since last fall. Rails in large quantities will be wanted during the summer months, but as we have said, these requirements were provided for, and all that is necessary now is to obtain deliveries. It may be possible to edge in an order once in a while, and in such cases $62.50 @ $64 is the ruling price for early deliveries. For winter work, manufacturers are quite willing to accept $60, at which figure a good many orders have been entered. Manufacturers abroad are similarly situated, full for the early summer months, but willing to concede a little on later deliveries. We hear of sales of several thousand tons English Rails for delivery at Gulf ports, at £7 @ £7. 6/.

Steel Blooms.—No change in quotations, and no recent transactions, so far as we can learn. Nominally, £6. 10/ @ £6. 12/6, c. i. f.

Iron Rails.—Some new business has been done during the week, but the outcome of all the inquiries has not been what was anticipated, although further contracts may yet be closed before the week is out. Buyers appear to be holding off for lower prices, and it would be very difficult to close a contract unless at concessions from the rates current a month ago. One 2000-ton lot was taken (it is believed) at less than $47, although $47 @ $47.50 is the usual asking price for heavy sections. The mills are not likely to be short of work for the present, however, and manufacturers are disposed to wait further developements before making any radical change in their quotations. English rails are offered at $46, but we have not heard of any sales.

Old Rails.—The market is very dull, and it is impossible to get offers for large lots at anything near what holders expect. We have not heard of a single transaction since date of last report, but $27.50 @ $27.75 appear to be asking prices, while

buyers offer $27 for limited quantities for shipment or in store.

Scrap Iron—is dull and hard to move unless at lower prices, say $30 for the best No. 1, down to $27 or $28 for short. Cast is in fair demand at $19 @ $20. Stove Plate, $16.50 @ $17.

PITTSBURGH.

Office of *The Iron Age*, 77 Fourth Avenue, Pittsburgh, Pa., April 5, 1881.

Our manufacturers generally continue to complain of business as being dull; unusually so for this particular time, and they attribute it mainly to the backwardness of the season. Reports from the West, the Northwest in particular, are very unfavorable; heavy snow storms have prevailed in that section of the country during the past week, and even here snow fell almost every day from last Wednesday until Sunday, and, as a consequence, all kinds of outdoor work, if commenced, had to be stopped. Reliable advices from some sections of the West report that the first fall of snow occurred early in November last, and that the ground has not been visible since that time. Not only did it almost put a stop to outdoor work, but, in many sections, rail transportation was materially curtailed, and, this being the case, it is not strange the demand for all kinds of manufactured goods is light, and no improvement can reasonably be looked for until good weather sets in.

Pig Iron.—There has been an increased volume of business the past week, caused by the sale of a couple of large lots, one of 2000 and the other of 1000 tons; as a rule the demand is still of a hand-to-mouth character, confined to supplying immediate actual wants. While prices are without quotable change, the feeling on the part of furnacemen is less confident, and some consumers assert that they can buy all they want at a reduction of 50 cents per ton, as compared with prices a month ago. We hear of some brands being offered at a decline of $1; whether this is so or not it is evident that furnacemen generally are not so confident of the immediate future as they were a month ago, and instead of looking for a still further advance, the majority of them now feel that there is a possibility of the market taking a turn backward, and it is pretty generally admitted that unless more remunerative prices for finished Iron can be obtained there is not much chance for any further advance in the raw article. Mill Irons may be quoted at $22 @ $23, 4 mos., for ordinary to good Neutral, and $23.50 for extra do.; $24 @ $25 for cinder-mixture Red-short, and $27 @ $27.50 for all ore do.; Foundry grades $23 @ $24 for Nos. 2, and $25 @ $26 for No. 1 Sales 2000 tons (Alleghany River) Gray Forge (native ore) at $22.50, 4 mos., and 1000 tons all (Lake) ore, Red-short, at $27.50. Nothing doing in Bessemer; quoted nominal at $23 @ $29, 4 mos. Eastern Charcoal (Cold Blast), $37 @ $38.

Manufactured Iron.—Trade, instead of getting better, appears to be growing worse. But few, if any, of the mills are working up to their full capacity, and with orders sought after, prices, as might be expected, are weak and unremunerative. Some mills, whose necessities force them to realize, are booking orders at prices that certainly do not more than cover actual cost, while others, although anxious for business, are refusing to sell at the prices in question. That there will be an active business as soon as the spring trade opens up fully is confidently expected, but as regards prices the outlook is not very encouraging. Bars are still quotable at 2.15¢ @ 2.25¢ rates, 60 days, 2 % off for cash; Plate and Tank, 2.60¢ @ 2.70¢, with a very light demand; Sheet, 3.50¢ @ 3.60¢ for No. 24. There is considerable activity in Skelp Iron. The mills that make it are well supplied with orders, but prices are very unsatisfactory. Best brands of Boiler Plate, 5½¢.

Nails.—The dullness noted in our report of last week still continues, but it is confidently expected that orders will commence to come forward freely before long, as stocks in hands of jobbers are small, and the season for actual consumption cannot possibly be much longer delayed. While manufacturers generally hold firm for full card, outside lots are still being picked up at $2.75 @ $2.80, net cash.

Wrought Iron Pipe.—The demand for this, like everything else, is slow, owing to the backwardness of the season, but the mills are running full and "piling up," in anticipation of a big spring and summer trade. The discount on Gas and Steam Pipe has been reduced to 60 and 5 %, instead of 65 straight. Oil-well Casing and Tubing remains unchanged at 70¢ ₱ foot, net, for Casing, and 21¢ for Tubing.

Railway Supplies.—There have been no sales of Steel Rails reported here for some time, in the absence of which they are quoted at $64 @ $65, cash, at mill. Railway Spikes firm, but unchanged, at 2¾¢, 30 days; Splice Bars, 2.25¢ @ 2.35¢; Track Bolts, 3.25¢ @ 3.50¢, according to nut.

Steel.—Business is reported as being slow for the season. Some of the mills are not fully employed. Homogeneous Steel, used for Steel boilers, is quoted at 6½¢, and the consumption is steadily increasing, having largely supplanted iron boiler plate for the use in question. Standard brands of Cast Refined Steel, 11¢; Crucible Machinery, 7¢; Bessemer and Open-Hearth do., 5 @ 5¼¢; do. Spring, 4¢ @ 4¼¢; do. Plow, 4¼¢ @ 4½¢

Scrap.—The movement continues light as compared with a month ago, but has remained unchanged; No. 1 Wrought, $30 @ $31 per net ton for selected railroad, and $28 @ $29 for ordinary. Old Car Wheels, nominal at $30 @ $32 per gross ton.

Coke.—There has been a better supply of cars within the past few days, and the shipments have been considerably larger in consequence. The consumption of this, like many other articles of recent origin, is steadily increasing; it is being sent to nearly all parts of the country. Even in the anthracite coal region furnacemen are using more or less, and as it is [more expensive, if we mistake not, than Anthracite Coal, the presumption is that it makes a better quality of Pig Iron. Prices remain unchanged; for immediate delivery, $1.65 @ $1.75, free on cars at ovens.

Coal.—Owing to the water in the river being too low, there has been very little Coal shipped during the past week, but operators are busy looking up their empty craft, so as to be in shape to take advantage of the next rise. Notwithstanding the large shipments ever since the resumption of navigation, there appears to have been no accumulation in the down-river markets, and prices are steady in consequence.

Petroleum.—There has been no change deserving of mention in this article during the past week.

CHICAGO.

Office of *The Iron Age*, 36 and 38 Clark Street, cor. Lake Street, Chicago, April 4, 1881.

Pig Iron.—We have no change to note in the market for Lake Superior Charcoal Irons during the past week. Prices are firm, and there has been a fair average amount of sales, particularly in Foundry and Coke Irons. We quote: Lake Superior Charcoal Nos. 1 and 2, $32; No. 3, $33; Nos. 4, 5 and 6, $34; Scotch Imported (according to brand), $27.50 @ $29; Scotch American (according to brand), $27 @ 29; Anthracite, $24 @ $26; Coke, $25 @ $27; Silvery (soft), $24 @ $26.

Rails.—The demand for Iron Rails continues satisfactory, with no change in prices. We quote, according to specification, $49 @ $53.

Manufactured Iron.—The amount of business done in Manufactured Iron for the past month has, it is said, exceeded that for any corresponding month in previous years. We have no change to note in prices and the demand continues good. We quote: Bar Iron, $2.50 for ordinary orders, and $2.40 for carload lots; Sheet Iron, from 10 to 14 gauge, at $3.40, and $3.30 for large lots; Tank Iron at $3.40, and $3.30 for large quantities; Hoop Iron, $3.20 @ $3.30.

Nails.—While the demand for Nails continues fair, we learn that jobbers have, in some instances, made a concession of 10¢ per keg from the established price, but it is thought that this reduction will have no effect on the regular card. We quote $3.20 for ordinary lots, with usual discount of 10¢ off for carload lots and 2 % for cash.

Steel.—Trade in Tool and Machinery Steel for agricultural purposes has been satisfactory during the past week at prices quoted: Tool, 12¢; Machinery (open hearth), 6¢; Crucible Machinery, 7¢; Hammer (Cast), 2 inches and under, 9¢; over 2 inches, 10¢; Cast Spring, 7¢; open-hearth Spring, Tire and Sleigh Shoe, 5¢. In large lots these prices would be shaded.

Scrap Iron.—The demand for Scrap Iron continues fair at prices quoted: Forge Scrap, $30 @ $32; No. 1 Wrought, $26 @ $27; Heavy Cast, $23 @ $24; Stove Plate, $17 @ $18.

CHATTANOOGA.

Office of *The Iron Age*, Market and 8th Sts., Chattanooga, April 4, 1881.

Since our last report the weather has imitated, for most of the seven days, a Northwestern blizzard in a modified way. Vegetation that was well advanced by the warm days of the previous week has suffered severely from sharp freezes and cold winds. Most of the earlier fruits have been seriously damaged, if not totally destroyed. The rough weather has been a serious impediment to business; yet trade, in a general way, has shown decided improvement over the week previous in value and tone of the markets.

Pig Iron.—There is no change to note. Manufacturers are confident of a long lease of present prosperous times, and are pushing their products to the fullest limit of their furnaces. We quote: No. 1 Foundry, $25 @ $27; No. 2 Foundry, $23 @ $25; Gray Forge, $20 @ $22; White and Mottled, $18 @ $20; Car Wheel Metal, $38 @ $40.

Miscellaneous Articles.—There has been a reduced consumption of Old Rails in the district for some time, and the spring track renewals have more than kept up the usual supply. We quote them weak at the old rate, $26 @ $28; Wrought Scrap, $20 @ $24; Cast, $15 @ $17; Old Wheels, $28 @ $30.

Ores.—We quote: 50 % Brown Hematite, per ton, $2 @ $2.75; Red Fossil, $2 @ $2.25.

Nails—Are steady and quiet. There is no considerable demand for them in the South at this season. Dull at $3.25 rates is about the market.

Manufactured Iron.—Bar continues slack. We quote it $2.35, weak. Railroad supplies are stiff and active. Orders, to insure being filled promptly, must be made ahead. We quote: Spikes, $3; Track Bolts, $4; Treble Bolts, $4.50; Fish Plate, $2.50.

Coal.—Lump at $4 @ $4.50 per ton, delivered. Manufacturers' supplies, $2 @ $2.50, at mills.

Coke.—Furnace Coke, $3 per ton at furnace; Foundry, 10¢ @ 12¢ per bushel.

Steel and Iron Rails.—Steel, $62, at mill; Iron, $50 @ $52; Small T, $57 @ $60.

BOSTON.

April 2.—There has been no change in prices of American Pig Iron since our last report; but there is reason to believe that furnacemen are continually accepting orders for prompt delivery at less than quoted rates, and that the nominal firmness of the market is due to the old notion that prices are to be higher later on. The actual tone of the market, however, is weak, and unless there is a radical improvement in the demand from consumers both in this country and abroad within the next few weeks, we look for lower quotations. We quote *American Pig Iron* at $25 @ $25.50 for No. 1 X; $22 @ $22.50 for No. 2 X, and $20 @ $21 for Gray Forge. These prices are f. o. b. at the port of shipment. Small spot lots will command $2 ₱ ton higher. *Foreign Pig* has ruled dull and weak, and there have been some concessions in prices of the various grades. The outlook abroad is rather gloomy, and importers and dealers in foreign Pig Iron are disposed to shade prices rather than to undergo the risk of allowing stock to accumulate. We quote: Langloan, $24 @ $24.50; Glengarnock and Gartsherrie, $23 @ $23.50; Eglinton and Carnbroe, $22 @ $22.50, and Middlesboro', ("Clarence") $18.50 @ $19 for No 3 and $20 for No. 1. *Old Rails* are quiet and fairly steady at $32 for American, and $27 @ $29 for foreign. *Manufactured Iron* is fairly active and steady, and we continue to quote Refined Bars at $2.30 ₱ 100 lbs. *Norway and Swedish* are unchanged at $3.75 for Bars and $4.75 for Shapes. *Nails* are firm but quiet at $3 ₱ keg for 10d. to 60d. *Plate Iron* is moderately active and steady, quoting $2.95 @ $3 for Common and Tank; $3.15 @ $3.25 for C. No. 1; $3.50 @ $3.62½ for C. H. No. 1 Shell; and $4.62½ @ $4.75 for C. H. No. 1 Flange; and 6¼¢ for Bay State X Flange for fire-boxes, &c. *Copper* has ruled dull and weak, though nominally unchanged at 19¢ for large lines of Lake and 18½¢ @ 18⅝¢ for Baltimore. The Boston store price is 19¼¢ @ 19½¢ for Lake and 18¾ @ 19¢ for Baltimore. The market has continued to be characterized by a feeling of distrustfulness, and although the mining companies have expressed a willingness to make contracts for monthly delivery throughout the present year at 19¢, buyers on those terms have not been forthcoming. Possibly some of the large Connecticut consumers who have heavy orders in hand for cartridges or other Brass and Copper manufactures, may see fit to protect themselves by making contracts for material even at to-day's rates. But the takings for those purposes would have to be very large to have any strengthening effect upon the market in the face of the heavy stocks of Copper in this country and Europe. The production of Copper, as of most other metals, has been considerably in excess of consumption during the past season. There has been no change in the combination prices of Manufactured Copper. We quote: New Sheathing Copper at 26¢; Braziers', 28¢, and Bolts, 28¢; Bottoms, 31¢; American Yellow Sheathing Metal, 17¢ @ 18¢; Yellow Metal Bolts, 20¢; and English Yellow Metal Sheathing, 14¢, in bond. *Lead* has been slow of sale at 4⅜¢ @ 4¼¢ for car-load lots, delivered in Boston. Store lots command 4⅞¢ @ 5¢ for Western and 4⅝¢ @ 4¾¢ for Remelted. The prices of manufactures are unchanged, as follows: Bar, 6½¢; Pipe, 6½¢; Sheet, 7¢; Tin-lined Pipe, 15¢; Tin Pipe, 40¢, all less 10 % to the trade. No. 1 Solder, 11½¢. *Spelter* has been quiet and steady, and we quote common Western at 5⅛¢ by the car-load, and 5¼¢ @ 5⅜¢ for smaller lots. Remelted is obtainable at 4¾¢ @ 4⅞¢. *Sheet Zinc* is in moderate demand at 7¢ @ 7¼¢. *Tin* has been firm and moderately active at the same prices as last noted, quoting Straits and English at 20¢ @ 20¼¢. The firmer market for *Tin Plates* has led to a more active business. We quote good-sized lots, ordinary brands, as follows: Charcoal Bright, $6 @ $6.25; ditto Ternes, $5.35 @ $5.50; Coke Tin, $5 @ $5.12½, and ditto Ternes, $5.—*Commercial Bulletin.*

LOUISVILLE.

Messrs. Geo. H. Hull & Co., Commission Merchants, report to us as follows, under date of April 1: The market is very quiet in tone, and but for the large aggegate of sales, we should expect it to be a little lower in price. Some of the largest concerns, however, are sold so far ahead that they decline to book further orders at present, and there is nothing pressing on the market, except some odd lots of inferior grade, as nearly all sales made in this market are for cash. We continue to quote on this basis as below:

FOUNDRY IRONS.	
Hanging Rock Charcoal No. 1	$27.00 @ 28.00
" " No. 2	26.00 @ 30.00
No. 1 Southern, Charcoal	24.00 @ 25.00
No. 2 " "	22.00 @ 23.00
No. 1 Hanging Rock, Stonecoal and Coke	23.50 @ 24.00
No. 2 Hanging Rock, Stonecoal and Coke	22.50 @ 23.00
No. 1 Southern, Stonecoal and Coke	23.50 @ 24.00
No. 2 " "	22.50 @ 23.50
"American Scotch"	23.00 @ 24.00
Silver Gray	19.00 @ 22.00
Scotch	25.00 @ 26.00
MILL IRONS.	
No. 1 Charcoal, Cold-short and Neutral	$22.00 @ 24.00
No. 1 Stonecoal and Coke, Cold-short and Neutral	22.00 @ .....
No. 2 Stonecoal and Coke, Cold-short and Neutral	21.00 @ 21.50
No. 1 Missouri and Indiana Red-short	26.00 @ 27.00
White and Mottled, Cold-short and Neutral	19.00 @ 20.00
CAR WHEEL AND MALLEABLE IRONS.	
Hanging Rock, Cold-blast	35.00 @ 42.00
Alabama and Georgia, Cold-blast	35.00 @ 40.00
Kentucky, Cold-blast	35.00 @ 40.00

W. B. Belknap & Co., Iron and Steel Merchants, Nos. 113 and 115 Main street, report to us as follows, under date of April 2: The market is barely steady, and, though prices are not quotably lower, sales are being pressed, and possibly buyers canvassed more closely than for some months past. All talk of an advance to $2.50 card for Bars has ceased, and we shall be reasonably content if $2.25 @ $2.30 is maintained. Another storm of cold and wet, with snow falling more or less for five days, has set us back two weeks. Advices from the neighborhood of Vicksburg, Miss., report that plantation work, usually well advanced by this season, is scarcely begun, and this is largely true of the whole South. Hardly a plow has been put to the ground in Kentucky. Nails remain where they were, consumption, however, not commensurate with the large production. Coal is still high, owing to the extraordinary demand. The new railroad, the St. Louis Air Line, will be pushed forward as rapidly as the weather will permit, and by next autumn it will be bringing the Indiana block coal to our doors.

CLEVELAND.

April 4.—*Pig Iron.*—The week just closed has been one of excessive depression in all kinds of Pig metal. The heavy storms have completely stopped the delivery of metal, and greatly retarded all kinds of outdoor work. Foundry Irons have been selling very meagerly, and the mills, generally filled up two weeks ago, have not placed any orders since our last report. Prices remain about the same as heretofore quoted, but are weak. There is very little demand for Charcoal Iron, and prices for that quality are no better. The dealings in Scrap Iron and Old Rails have been very slow, although prices are firm and a number of buyers are in the market; but, expecting to see a decline, are holding off their purchases or placing their limit at a price which sellers will not meet.

April 4.—*Ores.*—The Ore market remains in about the same state as last week. There have been several lots sold for present delivery at about the prices quoted along back. The indications are the docks at the lower Lake Erie ports will be well cleared by the time navigation opens. As we advised you previously, Bessemer Ores have gone pretty rapidly, and are mostly sold out; most of the companies entirely so. Ores suitable for foundry and mill purposes are selling somewhat slower, although every week shows contracts closed for some one of these different Ores in quantity. The outlook at the present writing is that we shall have a short season of navigation, and as consumption will be large, there is no doubt that all the Ore that will be shipped from Lake Superior will be consumed.

NEW ORLEANS.

Messrs. Minnigerode & Co., dealers in Railway Supplies, 61 St. Charles street, write as follows, under date of March 31: We note several large transactions in New Steel Rails for importation through this port at prices not made public, but supposed to be about the figures below quoted:

Scotch Pig, f. o. b., as per brand	$26.00 @ $28.00
Bar Iron	.02½ @ .....
Nails	.03 @ .....
New Iron Rails (foreign)	45.50 @ 48.00
New Steel Rails (foreign) for standard section	64.00 @ 65.50
Track Splices	.02½ @ .....
" Bolts	.03½ @ .....
" Spikes	.03 @ .....
Old Iron Rails, f. o. b.	28.00 @ 30.00
Old Car Wheels, gross ton, f. o. b.	28.00 @ 29.00
No. 1 Wrought Scrap, net ton, f. o. b	25.00 @ .....
No. 1 Cast Scrap, net ton, f. o. b	20.00 @ .....

CINCINNATI.

April 4.—*Pig Iron.*—The market continues inactive, but steady in price; transactions are confined to filling orders from consumers for small lots and for current use. Many of the Charcoal furnaces are out of blast, and the continued winter weather will delay their blowing in again till at least one month later in the season. Meantime the stocks on hand will be materially reduced, this being known gives firmness to present prices: Hot-blast Charcoal Foundry—Best No. 1, $27.50; good, $26.50 @ $27. No. 2, low, $25 @ $25.50; good, $25.50 @ $26. Best Machinery, $26 @ $27; Car Wheel, $28. Coke Foundry, No. 1, $25; No. 2, $23 @ $23.50. Bituminous Foundry, No. 1, $23 @ $23.50; No. 2, $22 @ $22.50. Bituminous Silver Gray softeners, No. 1, $22; No. 2, $21; No. 3, $20 @ $20.50. Bituminous Machinery, $21 @ $21.50, all 4 mos. Cold-blast Charcoal Car Wheel, $36 @ $40; Warm-blast, $28 @ $38. Bar Iron, $2.15 @ $2.25 card rate.

ST. LOUIS.

Messrs. Hoffer, Plumb & Co., Pig Iron and Iron Ore Merchants, 417 Pine street, write as follows, under date of April 2: There has been but little business done during the past week, transactions being almost altogether confined to small lots. For cash we quote:

HOT BLAST CHARCOAL.	
Missouri, No. 1	$28.00 @ 29.00
Southern, No. 1	25.00 @ 26.00
Hanging Rock	28.00 @ 29.00
COKE AND COAL.	
Missouri No. 1	none offering.
Southern No. 1	24.00 @ 25.00
Ohio No. 1	24.00 @ 25.00
MILL IRONS.	
Cold-short	22.50 @ 23.00
Red-short	24.00 @ 25.00
CAR WHEEL AND MALLEABLE IRON.	
Missouri	31.00 @ 35.00
Southern	35.00 @ 38.00
Ohio	38.00 @ 43.00

Colemar & Bro., Third and Pine streets, write us as follows, April 4: The demand during the latter part of March has been lighter than for some time past, owing probably to the severe weather and partly to the fact that many of our largest consumers have had their orders booked ahead for some months. Prices, especially for inferior brands, show some weakness, but furnacemen, as a rule, do not seem inclined to meet buyers' views. We quote, f. o. b., here, for cash:

FOUNDRY IRONS.	
No. 1 Hanging Rock, Charcoal	$28.00 @ 29.00
No. 2 " "	27.00 @ 28.00
" Coke and Stonecoal No. 1	24.50 @ 25.50
Hanging Rock Coke and Stonecoal No. 2	23.50 @ 24.50
Southern Charcoal and Coke No. 1	25.00 @ 26.00
Missouri " " No. 1	26.00 @ 28.00
Silver Gray	22.00 @ 23.00
MILL IRONS.	
No. 1 Cold-Short and Neutral	22.50 @ 23.00
No. 1 Red-Short	25.00 @ 26.00
CAR WHEEL AND MALLEABLE IRONS.	
Hanging Rock Cold Blast	40.00 @ 44.00
" Warm Blast	35.00 @ 38.00
Lake Superior	32.00 @ 36.00
Southern	35.00 @ 40.00

RICHMOND.

Mr. Asa Snyder, Iron Merchant and Furnace Agent, writes as follows under date of April 4: A vigorous business is still maintained, and prices range as at last report, with slightly weakening tendency. Below you have quotations:

Scotch Pig Iron	$24.00 @ 27.00
American Scotch Pig Iron	26.00 @ 27.00
No. 1	24.00 @ 27.00
No. 2	22.00 @ 25.00
No. 3	21.00 @ 23.00
Mottled and White	19.00 @ 21.00
Virginia Charcoal C. B. Wheel Iron	37.00 @ 39.00
" Coke Pig Iron No. 1	23.50 @ .....
Old Rails	26.00 @ 28.00
Old Wheels	28.00 @ 29.00
Wrought Scrap, No. 1	22.00 @ 25.00
Cast, Machinery Scrap	21.00 @ 22.00
Richmond Refined Bar Iron	@ 2.5
Horse Shoes, Tredegar	@ 4.00
Mule " "	@ 5.00

Our English Letter.

Review of the British Iron, Steel, Metal and Hardware Trades.

(*From our Regular Correspondent.*)

London, Eng., March 21, 1881.

THE MARKETS.

here appear to be going from bad to worse, if there can be any degree of comparison where is there virtually no movement. As there can be no measurement without a standard, so there can be no comparative degree without a positive, and so far as I can see it is a long time since there was anything positive about the iron trade of this country. Just now, in fact, the bottom seems to have dropped out of everything, to use one of the several expressive euphemisms which have been imported into this country from the United States. There is literally scarcely anything doing in the open markets, and at many of the works which were quite busy a month or so ago there is now a visible slackness and an awkward intermittency which are significantly indicative of poorly supplied order books and a "mixed" conception of the near future. This remarkable relapse is almost universally felt in the iron trade and is most openly confessed, which I take to be a hopeful symptom. A little too much protesting is healthy and foreshadows better things to come before long. At the moment, however, the thing is genuine enough, and is bringing forth the customary crop of explanations and vaticinations, both in public and in private. The latter one may get rid of in one of several summary modes, but the man who will air his grievances and his "views" in print adds a new terror to bad times—even as Lord Brougham is said to have dubbed a certain eminent biographer to have added a new terror to death. I suppose it is necessary that gentlemen should have "views" of one or other kind, but I don't understand why these views don't achieve the blushing honors of type prior to, instead of contemporaneously with, the events upon which they touch. This may be owing to the peculiar twist of my mental organization, yet still it is. Why, for instance, have not some of the gentlemen who are now rushing into print been more active and earlier in denouncing that overproduction which they have, apparently, only just found out? Why have they allowed your obedient servant to play the part of the pelican in the wilderness, the Cassandra, *et hoc genus omne*, in that respect, instead of strengthening his feeble efforts by their own mighty arms? I have humbly decried these things afar off, as it were, and "greatly daring," have ventured to condemn their exaggerated make of iron and lo! they now come in and also wish to claim the full day's penny. Even so! the conscious right of might be mine! So shall the just triumph! Certain it is that until there is a marked diminution of the production of pig iron in Scotland and Cleveland the iron trade will not improve, even if it does not grow worse. No steps have as yet been taken in that direction, so that the inference is in favor of lower prices and a sharp period of disorganization and failures, to be followed by a lessened aggregate output and a more stable market. This may be averted by assuming a renewal of your demand and other equally speculative and unreliable eventualities, but with ordinary conditions it is more likely to be carried out to the very letter rather than the contrary. Two or three small failures have been reported in Staffordshire within the past week, and, if I am rightly informed, others are imminent there and elsewhere. Under these circumstances it may be worth while to quote from a letter which has been published in the "Money" article of the *Times*, signed "Iron:" "A careful survey of our trade induces me to think that the present hypochondriacal state of feeling is unjustifiable, and will at a very early date disappear. The stoppage of traffic of all the iron works and collieries during the month of January by the severe storm interrupted deliveries, and created a feeling of gloom which has not yet been dispersed; and the political difficulties which have beset the government in Ireland, the Transvaal, Afghanistan and Greece have all had a depressing influence. Let me, however, point out that the iron trade, notwithstanding all its fluctuations, its low prices and its high prices, its periods of depression and its times of extravagance, is a constantly increasing and thriving trade. This may be easily proved. The production of pig iron in 1860 was 3,900,000 tons; in 1865, 4,800,000 tons; in 1870, 6,000,000 tons; in 1875, 6,350,000 tons and in 1880, 7,200,000 tons. No trade in the world would develop at this rate if it did not yield to those engaged in it a fair reward for work and capital. The activity during 1879 has cleared away stocks of pig iron, which I cannot estimate at less than 500,000 tons, then in the hands of private manufacturers, and which were never reckoned upon as among the public stocks during 1878 and 1879. Railway yards have been cleared of at least 300,000 to 400,000 tons of scrap iron which waited consumption. It must surprise everybody connected with the trade that stocks in storekeepers' yards, with such an immense production as 7,200,000 tons last year, have increased so slightly. The stock at the close of 1878 was 1,016,337 tons, and the stock at the close of 1880 was 1,070,124 tons. During the past two months there has been an increase in stock in Middlesborough and Scotland of 126,000 tons, or about 10 days' production. It is this increased make which has frightened buyers and caused the depression which for the moment exists. Our home iron trade manufacture is in a most satisfactory state, and our foundries and forges and shipbuilding yards were never more busily at work. Although we have lost the greater portion of last year's American demand, there are signs of increasing requirements from the whole of the rest of the world, and there is every appearance of a very extensive spring trade. The success of the Thomas-Gilchrist process of manufacture will give England the command of the iron and steel trade of the world. A stock of pig iron in reserve which only represents

two months' consumption need alarm nobody. Were any unexpected demand to spring up there would be at least 800,000 tons less iron in this country to meet it than there was when the American demand arose in 1879, and we should then find prices bounding upward at worse than the previous unreasonable pace."

The views here set forth have provoked some adverse criticism. The *Ironmonger* remarks: "There is a certain amount of optimism in them which everybody cannot be expected to share, but the general idea of the writer, that extreme oscillations are unwise and uncalled for, may be safely adopted." Another correspondent of the *Times*, writing from Liverpool, points out that to speak of the stock of pig iron in reserve as only equal to two months' consumption is a mistake. It should be four months' consumption, at least. It is also pointed out that the rate of increase of stocks is not at all surprising, bearing in mind the enormous speculative shipments to the United States in 1880. The correspondent winds up by expressing the belief that "the United States are now quite able to meet all their own demands for iron, large though they are likely to be." If some glimmering of the truth of this observation (in a broad sense, at all events) would penetrate into the minds of the British ironmasters, it would save everybody a great deal of trouble, vexation and money. Your boom was a useful article in its way, but it has done an infinity of harm to the iron trade of this country by encouraging speculation and over-shipments, in the first place, and, since its decease, by the hocus-pocus games which have been carried on in its name and in its left-off clothes. Positively, it did you more harm than ourselves; indirectly and consequentially, we in this country have suffered the more. Their appetites whetted by the taste of prosperity in 1879-80, the whole circle of producers appear to have toiled onward and upward, pushing before them the Sisyphus stone, to which they have stuck with a perseverance worthy of a better cause. They have clung to the idea that there would be a renewal of the American demand on a large scale, and that during the heat of the new *melée* Providence would help those who helped themselves, while the Other Gentleman would, as usual, select the hindmost. The expectation has not "come off"—the thing is seen to be played out, and the only question is—what next? Pending the reply, I may as well place on record the highly pleasing fact that we have still two or three branches of our metallurgical industries which are not devoid of active features. The Bessemer concerns, for instance, are almost universally busy. They are doing a heavy turnover in rails, and are understood to be sold forward for several months in advance. Among the latest contracts placed I hear of one for Mexico for 55,000 tons of 30 to 40-pound sections, the deliveries being arranged over the ensuing 12 months. A sale is reported of 5000 tons Welsh iron rails (56-pound weights) at £5. 7/6, net cash, f. o. b. in Bristol Channel, for your Southern ports. Blooms are in fair request, 1000 tons in a line having been done for one of your ports at £5. 15/ per ton f. o. b. Newport (Monmouthshire), which is a shade below recent rates. Sundry agents in London for United States houses cannot secure small lots of blooms, although I have heard of instances in which supplies have been obtained from the London agents of German and French concerns. There is a considerable amount of speculation as to the forthcoming Canadian Pacific contracts, and there are rumors that two or three of the principal concerns have made up their minds to have the order at all hazards, but not, I guess, at any price. In France a government order for 191,818 tons of steel rails has been given out in 13 lots to Schneiders, of Creusot, Terre Noire, Firminy, Demain and Auzin, at prices varying from 228 francs to 252 francs per ton. It is now asserted that the whole of the German, Belgian and French works are fully occupied and pre-engaged until the end of April or middle of May.

SCOTCH PIG IRON

as in no respect undergone any real improvement during the week, and does not present any features at the moment which would indicate the probability of such a change. Statistically, the position is very weak, and in other respects the market seems about as low and pulseless as one could well imagine. Shipments are on a limited scale, and the home demand is not up to the mark, owing to the renewed snow-storms and generally backward season. At the moment there are 120 furnaces in blast in Scotland (including the 7 which are running on hematites) as against 114 this date last year. The quantity held by Connal & Co. now amounts to 532,873 tons, as compared with 441,041 tons this date 1880, or an increase of nearly 100,000 tons over and above the consumption and shipments during the twelvemonths. The addition last week was 2,400 tons, shipments shewing a falling off of 12,000 tons during the same week. The aggregate decrease in shipments to date this year has been 54,828 tons, on a total of 90,733 tons. Importations from Cleveland into Scotland now show an increase of 1358 tons, on a total this year of 59,382 tons. Ballast pig is 43/ per ton alongside. The general quotations of Messrs. John E. Swan & Bros., Limited, and Messrs W. Colvin & Co., agree with those appended. Messrs. James Watson & Co. report, under date March 19: "The downward tendency which has recently prevailed in our market still continues, with a limited demand for makers' iron at lower prices. On Monday the market was steady, with business between 49/ and 49/2½ cash, while on Tuesday the price was weaker, with transactions down to 48/9½ per ton. On Wednesday the market was again flat, warrants receding to 48/5 cash, and yesterday the price declined to 48/ per ton. This forenoon as low as 47/10 was accepted; afterward a speculative rally set in and the price quickly improved to 48/3, closing sellers thereat. The shipments last week were 8261 tons, as compared with 20,925 to 18 for the corresponding week of 1880." We quote:

	No. 1.	No. 3.
G. M. B., at Glasgow	49/6	47/6
Gartsherrie, at Glasgow	58/6	50/6
Coltness, "	58/6	50/6
Summerlee, "	58/	50/
Langloan, "	58/6	50/
Carnbroe, "	55/6	50/
Calder, "	58/6	50/
Glengarnock, at Ardrossan	55/6	50/6
Eglinton, "	49/6	47/6
Dalmellington, "	49/6	47/6
Shotts, at Leith	50/	51/6
Kinneil, at Bo'ness	50/6	49/
Carron, at Grangemouth	51/	50/

IN CLEVELAND

pig iron is quiet, but there is not that utter lack of stamina which is the characteristic of the market in some other parts of the country. Prices are somewhat unsettled, but the ironmasters are not despondent, their belief being that with the opening of the shipping season they will be relieved of a large proportion of their surplus stocks. In Connal's Middlesboro' stores there are now about 156,000 tons, besides about as much more in makers' own stores and in makers' yards. Current figures for G. M. B. Cleveland pig at makers' wharves on the Tees, for net cash, are:

No. 1 Foundry	42/6	Mottled	37/
2 "	40/6	White	36/6
3 "	38/6	Refined Metal	55/
4 "	38/	Kentledge	47/
4 Forge	37/6		

The iron works of the Cleveland and Durham localities are not so busily engaged; indeed at several establishments there is no longer any pressure. Even ship plates are weaker, and can be bought at £6. 2/6 @ £6. 5/ per ton. The steel works are fully occupied. Among last week's shipments is one of 1500 tons of rails from Bolckow Vaughan's to New York. A lot of 500 tons of Cleveland pig and some parcels of spiegel and hematites are also being despatched to your ports from Middlesboro' to Hartlepool.

WEST COAST HEMATITES

appear to be participating in the almost universal quietude, and are not very strong—perhaps they may be termed negotiable—at the following figures for small parcels, and as much as 2/6 @ 5/ cheaper for larger lots:

	No. 1.	No. 2.	No. 3.
Cleator	71/	70/	67/
Lonsdale	62/	61/	60/
Werkington	62/	61/	60/
Lowther	62/	61/	60/
Moss Bay	62/	61/	60/
Harrington	62/	61/	60/
Solway	62/	61/	60/
Maryport	...	...	62/
Askham	62/	61/	62/

In the districts more particularly devoted to the smelting of the red hematite and of the Furness section of Lancashire and of West Cumberland, there are at present 62 furnaces blowing out of a total of 81 built. The largest number is at the Barrow Works, where 13 of 14 are in blast. Of the 19 out some are undergoing reconstruction, or are not available at all. Orders from the United States for these pigs are coming to hand, but the West Coast furnaces may be said to be occupied, as a rule, in supplying the steel works, or otherwise on orders for home consumption.

FROM SHEFFIELD

there is very little news, and what there is cannot be said to be startling or reassuring. As a matter of fact, I am given to understand that the course of many of the local industries is not at all cheering, and that some of the trades are now worse off for work than they have been any time these twelve months. This is more particularly true of the lighter industries, such as silver and electro-plating, certain branches of the cutlery manufacture, edge-tools, files and saws. At some of the places where these trades are carried on, I hear of the workmen being "stinted" to a maximum of 10/ per week, but I am bound to state that these are not among the largest or best factories. Some of the iron and steel works are doing pretty fair business. Charles Cammell & Co., Limited, of the Cyclops Works, Sheffield, for the year ended December 31 last, had the respectable sum of £62,455 available for dividend, including £20,695 brought forward from the previous year. A dividend of 5 per cent. is now declared, thus absorbing £40,000 and leaving £22,455 to be carried forward to the present year's accounts. Cammell's undertaking comprises the iron and steel works at Sheffield, Grimesthorpe and Penistone, and the Oaks Collieries, near Barnsley. The report of William Jessop & Sons, Limited, is of such general interest on your side that I append it almost *in extenso:* The total profit for the year, including the balance of £1830. 3/7 from last account, is £32,232. 7/11. After deducting £8790. 16/8 paid for interest on mortgage loan and on calls received in advance, there remains to be dealt with a net balance of £23,441. 11/3. It is proposed to write off £4000 for depreciation of buildings and machinery; to set aside £1000 in reduction of formation expenses, and to recommend the payment of a dividend of 40/ per share, amounting to £15,374, being at the rate of 6⅔ per cent. on the called-up capital, leaving a balance of £3067. 11/3 to be carried to next account. During the year payments have been made amounting to £35,000, in reduction of the mortgage loan, which now stands at £140,000. The whole of the building machinery and plant have been maintained in an efficient state out of revenue. The stock accounts received from the principal depots in the United States have been verified by Mr. George L. Weed, of New York, president of the Weed & Becker Manufacturing Company, and the prices attached to the whole of the stock lists have been submitted to and approved by Alderman Tozer, Ex-Mayor of Sheffield. The directors add that, though the improvement in trade which was noticeable at the close of 1879 was not sustained beyond the early months of 1880, the several works have been well employed throughout the year, and a steady demand for the company's manufactures is anticipated during the current year. The directors regret to record the loss of a valued colleague in the death of Mr. Wright Turner, J. P., whose vacant seat at the board has been filled by the election of Mr. Wm. Jessop, of Worksop. The retiring directors are Mr. Thomas Rose, J. P., Manchester, and Mr. Joseph Burdekin, Sheffield, who, with the auditors, Messrs. Chadwicks, Collier & Co., Manchester, are eligible for re-election. [The subscribed capital of the company is £384,350, in £50 shares. The amount called up is £30 per share, making the total paid-up capital £230,610. The dividend last year was 30/ per share, equal to 5 per cent. per annum.] The Northfield Iron Co., an unlucky concern in the vicinity of Sheffield, has had a petition filed against it, and will probably stop. It has never been a thriving undertaking, properly so termed, but I had latterly thought it had a respectable chance of surviving. Perhaps some compromise may enable it to live.

FOREIGN.

FRANCE.

(*Moniteur des Interets Materiels.*)

PARIS, March 20, 1881.—*Metals.*—Business in metals has been moderately active; while Copper has been barely sustained, Tin has improved, and so has Spelter. Lead remaining unaltered. We quote *Copper:* Chili Bars, 158.75 @ 160 francs the 100 kilos.; Ingots and Slabs, 165; Best Selected, 170; and pure Corocoro Ore, 162.50. *Tin.*—Banca, 240; Billiton, 238.75; Straits and Australian, 237.50; and English, 235. *Lead*, 37.50 @ 38.50 and *Spelter*, 43 @ 44. *Iron* continues to look up. At the late meeting of Iron masters the price of Merchant Iron has been raised 50¢. Since then it sells at Paris at 19.50, and flooring ditto at 20¢. The Iron for the Paris post-office has been ordered from various makers at the North, to be delivered in April and May; it amounts to 4000 tons. There will be a great deal of building going on in this city, and great activity will prevail to begin with next month. Iron industry flourishes in France better than elsewhere in Europe, because our Iron works have been well built and furnished; a great deal of capital has been lavished on providing them with the very best machinery, &c., and, aside therefrom, the risk of giving credit in the Iron branch is not as great in this country as it is in neighboring ones. The good opinion of the future in this branch has caused capital to flow in freely quite recently, and in this manner, especially in the Haute-Marne, important consolidations now take place backed by ample amounts of money. It would lead us too far to enumerate all the vast enterprises now developing under this impulse throughout the Iron regions of France, but the movement is certainly one which attracts and deserves attention. *Coal.*—While, for domestic Coal, the season is as good as ended, much activity is displayed in industrial Coal, and the prospect in this line is a decidedly cheerful one.

BELGIUM.

(*Revue Universelle.*)

BRUSSELS, March 19, 1881.—*Iron.*—Prices are still sustained, but we apprehend that they will decline unless fresh orders drop in from abroad, for although most of our works are still quite busy, they are very much in want of orders that will promise them occupation for the coming months. Merchant Iron remains 13 @ 13.50; Sheet Iron is in active request at unaltered rates. Affinage Pig is more quiet, but without change in prices; Moulage is tending downward. The works most favored at present in the way of orders, are the steel works, bolt makers' Structural Iron concerns and small material manufacturers. We quote Sheet Iron, 18; better quality ditto, 20 @ 21; Beams, 14.50; English Pig, 5.80; Affinage Belgian; 5.95 @ 6; Moulage ditto, 6.75 @ 7; Sheet Rails, 16; Hoops, 24, and Axles, 25.50. *Metals* are sustained; we quote Copper, 162; Lead, 39; Banca Tin, 238.50; Billiton ditto, 236.50; Spelter, 43, and Sheet Zinc, 54. *Coal.*—Prices are upheld for the moment for Domestic Coal, but we apprehend that they cannot be sustained much longer, now that the season is virtually at an end. Industrial Coal remains firm and is still 1 franc higher than it was precisely a twelve month ago. We quote at the close Lump Coal 20 francs; Medium Sized, 17; Domestic as it runs, 14.50; Industrial with 50 % Lump, 15; ditto with 25 % Lump, 12.50 @ 13.50 and small ditto, 7.75 @ 8 francs.

GERMANY.

(*Borsenhalle.*)

HAMBURG, March 19, 1881.—*Iron.*—We receive the ensuing report from Dortmund: "There has been no change in the general situation since my last review. The demand in various branches is unmistakably on the decrease; chief among them are Merchant Iron and Sheets. Through their combination, the blast furnaces are enabled to dictate their price and the rolling mills have to submit, although in reality the high rate of Pig hardly leaves them any profit. In the long run, this anomaly cannot be kept up, and the blast furnaces, whether they wish to do so or not, will have to conform to the drooping prices of Merchant Iron. The foundries not being fully occupied, Foundry Pig has been lowered in price 2 marks per ton. Besides the blast furnaces only the Wire and Bessemer works are able to show profitable occupation, but in the Wire branch there will soon be more competition, for various new works will soon go into existence. As for Steel Rails and railroad material orders for the same are still dropping in all along. Last week an important adjudication on the part of the Hanoverian State Railway came off. The cheapest Steel Rails tendered were the Bochum Union, 2591 tons, at 155 marks at the works, and the Osnabruck Steel Works, with 4875 tons, at 159; both works are bidding for 4559 Iron Sleepers. Boiler makers and machine shops are moderately busy and seem contented, but bridge builders are not for the most part. Orders for Arms have become scarce, and the Bochum Union, the Witten Arms Manufacturing Company and the Annen Cast Steel Works all complain of a lack of them for some time past, while Krupp is turning out Guns, Arms, &c., for Italy, Roumania, Greece, Holland and Sweden in large amounts, but all of them for immediate delivery. Hence at Krupp's they are busy in this branch without relaxation night and day. Coal is without interruption weak, there being an insufficient outlet for the very large production; this causes prices to decline sooner than in former springs. A slight revival is expected next month." In the Sarre and Moselle, Merchant Iron and Sheets have been raised 2 and 3 marks per ton last week, but there is little or no change in other species of Iron there. It is doubtful whether the advance can be sustained. *Metals* have been steady. We quote: Lead, English, 17 @ 17.50; German, 15.30 @ 15.50; Copper, 68 @ 75; Tin, 95 @ 100, and Spelter, which is higher, 16.50 marks per 50 kilos.

HOLLAND.

(*Koch & Vlierboom.*)

ROTTERDAM, March 15, 1881.—*Tin.*—Pending the sale to come off at the end of the month our market has been quiet at 52.75 for Banca and 52.50 for Billiton. The course of Banca Tin since 1871 has been as under:

	1874	1875	1876	1877	1878	1879	1880.	1881.
Jan. 1	70	57¼	50	45	40¾	38½	54¾	55¼
Feb. 1	70	56¾	50½	43½	40	36¾	58¾	54
Mar. 1	62	54	50¼	43¾	40½	40	55½	53
April 1	53	51½	50	42¾	40	43	52¾	.....
May 1	57	50¾	49	42½	39½	40¼	50¾	.....
June 1	58½	50	45½	42½	39½	39½	43½	.....
July 1	60	50¾	46¾	42½	39¾	39	49	.....
Aug. 1	56½	48¾	44	41¾	39½	38½	56	.....
Sept. 1	57	51	43	40½	37¾	41¾	54½	.....
Oct. 1	56½	52¾	42½	40¾	35¾	45	52	.....
Nov. 1	58	52¼	44½	43	37¾	57	54½	.....
Dec. 1	58½	51	44¼	41½	39	56	56½	.....

P.S.—March 22.—Since the foregoing was written our market has become firmer again; Billiton alone has sold at 55.25 ₱ 50 kilos, and Banca on the spot now commands 53.25, while Billiton ditto sells at 53.

AUSTRIA.

(*Austrian Trade Journal.*)

VIENNA, March 20, 1881.—*Iron.*—The spring demand is slow in manifesting itself, although some works are tolerably busy. Sheet Iron, in spite of reductions made, does not move off as it should do by this time. The government has given an order for 15,000 tons Steel Rails for the Western Railroad to the combined Rail works, in order to favor them. They keep prices unreasonably high, and the government could probably have got them cheaper abroad. We really do not see why these works try to maintain such high rates, for the government cannot take off their hands all they turn out, and they have not got a monopoly. It seems to us that they fall into the old mistake of poor management, to be repeated in the end. Merchant Iron is dull, and so are Hardware and Hollow-ware. Tin Plates are weak, with a rather downward tendency. *Metals* have been the reverse of buoyant. We quote: Iron—Charcoal Pig, 43 @ 52 florins; Coke ditto, 47 @ 67; Merchant Iron, 115 @ 120; Sheet, 145 @ 180, and Pillars, 115. Copper, 74 @ 80; Tin, 114 @ 118; Antimony, 76; Lead, 20 @ 23; Shot, 24 @ 26; Litharge, 20 @ 25; Spelter, 18.50 @ 20; Sheet Zinc, 5 to 26, 25.50; Gun Metal, 85; Brass, 45 @ 60; Nickel, 4.50 per kilo.; Bismuth, 11.50; Blue Vitriol, 29 @ 32; White ditto, 14; Salzburg prime, 14 @ 17; Green Vitriol, 4.50 @ 5; Minium, 28; Sugar of Lead, 44, and Zinc White Vieille-Montagne Green Seal, 44; Red ditto, 34, and Blue ditto, 33 florins the 100 kilos.

INDUSTRIAL ITEMS.

MAINE.

Auburn's iron foundry has been rebuilt and is again in active service.

NEW HAMPSHIRE.

The Manchester Locomotive Works recently sent three locomotives to Texas, one going to San Antonio, another to Galveston and the other to Harrisburg.

MASSACHUSETTS.

The Franconia Iron Co., of Wareham, are shut down to take account of stock and to make some extensive alterations and improvements within the mill. The company are putting in new squeezers among other machines.

A new engine room, which takes in a part of the old tool room, is being made at the Springfield armory for the 240 horse-power engine being made at Fitchburg. It is expected to get the new engine running within a month.

The Rodney Hunt Machine Company, of Orange, are having a very good demand from the West for their woolen machinery, as well as for their patent improved rotary fulling mills.

The Kitson Machine Company, Lowell, are running their works to their fullest capacity, having now orders ahead for $75,000 worth of pickers, mostly for mills, the plans for which were prepared by A. D. Lockwood, of Providence, R. I.

A chance to secure the equipment of a first-class iron foundry, comprising flasks, ladles, cranes, engine and boiler, with patterns of gears, pulleys, columns, ship work, stable fixtures, &c., is offered by the Fulton Iron Foundry Company, who are to sell the contents of their establishment at South Boston.

CONNECTICUT.

A resolution incorporating the Hartford Electric Light Company passed the State Senate a few days ago. The capital stock is $50,000, in $100 shares, with permission to increase the capital to $250,000.

The Russell & Erwin Manufacturing Company have received notice from Melbourne, Australia, that they have been awarded three of the highest prizes for their exhibit of builders' hardware.

The Canton Bloomary Company, of Collinsville, are now engaged in the manufacture of first-class charcoal iron at the old powder mill place. A grist mill is also in operation at the same place.

The Derby Bit Company, of Derby, have been organized as a joint-stock concern. C. N. Blanchard has sold his interest to the company, which have bought the old sawmill site on Beaver Brook for factory purposes.

NEW YORK.

The Prall Superheated Water Company, of Brooklyn—capital, $2,000,000—and the Iron and Bullion Furnace Company, of New York—capital, $2,500,000—have filed articles of incorporation.

Mr. Albert H. King and associates have bought from D. B. Grant the Douglas Forge, on West Sixteenth street, New York, with all the plant for making hammered car axles. The forge is now running single turn and making 32 axles a day, but the new owners intend to increase the capacity to 125 axles a day. They have some large orders and expect to turn out good work. The new concern is known as the New York Steam Forge Company.

At the April meeting of the trustees of the East River Bridge Company, President Murphy stated that at the end of March 3362 tons of steel had been rolled at the Midvale Works, and 2116 tons had been forged into shapes. In March 248 tons were sent to the bridge ready for use, and prior to March 492 tons had been received, making 741 tons in all. In addition, 273 tons had been riveted up and were nearly ready for delivery.

At a meeting of the Iron Steamboat Company on Monday the following directors resigned: John Roach, Rufus Hatch, William Cramp, R. Cornell White, J. C. Ferguson, and the following were elected as directors to fill the vacancies: Sidney Dillon, G. M. Dodge, George F. Baker, John H. Hall, G. P. Morosini.

In our description of the Almond Coupling in a recent issue of *The Iron Age*, we were mistaken in saying that the Putnam Machine Co., of New York, are agents for it. This coupling is made and sold only by T. R. Almond, 84 Pearl street, New York, but one may be seen at the Putnam Machine Co.'s office.

NEW JERSEY.

By the burning of the shops and engine house of the Delaware, Lackawanna and Western Railroad Company at Dover last Monday evening, a loss was sustained estimated at $80,000.

DELAWARE.

The Marshall Iron Company, chartered by the State of Delaware, have purchased the sheet iron rolling mills at Newport (lately operated by Marshall Bros. & Co., of Philadelphia), and will at once put them in operation and manufacture all grades of sheet iron. The following gentlemen, experienced and well known to the trade during many years as iron manufacturers, will manage the affairs of the new company: Edward Mendinhall, president; Jos. W. H. Watson, secretary and treasurer; John Marshall, Henry Mendinhall and John T. Davis.

PENNSYLVANIA.

The L. B. Flanders Machine Works Philadelphia, are still full of work, the demand for their special tools covering a wide range of country. Orders were received during March for cylinder boring machines, valve seat planers and crank-pin machines from the Denver and Rio Grande railway, the Chicago, Milwaukee and St. Paul and Pennsylvania Railway companies. For export, orders have been received from Cuba, New Zealand, and one through the Baldwin Locomotive Works.

Alfred Box & Co., Northern Liberty Works, Philadelphia, are still crowded with orders for portable and other hoists. They are also having an active demand for their radial drills, for which during last month, among others, they received orders from the Pencoyd Iron Works, Philadelphia; Gordon & Lewis, Philadelphia; Geo. F. Blake Manufacturing Co., of Boston; Julius Johnson, New York; Richmond and Danville Railroad Company, Richmond, Va., and others.

A new firm has been formed in Philadelphia, under the title of Gordon & Lewis, for the purpose of enlarging the business, which, since 1864, has been conducted by W. J. Gordon alone. Mr. Gordon is the inventor and owner of valuable patents connected with tools for working in sheet metals, presses, dies, &c., the demand for which is rapidly increasing. Mr. Lewis was, until recently, connected with the Vulcan Steel Co., of St. Louis, and besides capital, brings valuable business experience to the new firm.

David Pettit & Co., at the old stand of Robert Wood & Co., Philadelphia, are sending large quantities of their ornamental iron fencing to the Southern States. For use in cemeteries there is a steadily increasing demand, a sample order to any one section usually bringing several others immediately.

The Harrison Boiler Works, Philadelphia, are kept very full of work. Quite a large number of orders have been received lately from parties who had Harrison boilers put in fifteen or twenty years ago. A very large amount of work is likely to be turned out this year, the demand being very active, both from the local trade and from buyers at a distance.

J. S. L. Wharton, Philadelphia, has made arrangements to meet a heavy demand which he expects this season for the Creasy Ice Breakers. A good many were sent out last season, and from the number of inquiries received, a much larger business is expected this season.

The Philadelphia Novelty Manufacturing Co. are building up a considerable export, as well as home trade, in their various specialties. These are all patented, and include "Novelty" paper clips, book binders, letter files, staple drivers, shelf brackets, can openers, horse hay forks, &c.

Several months ago Burnham, Parry, Williams & Co., proprietors of the Baldwin Locomotive Works, were requested by the syndicate which is constructing the Mexican National Narrow-gauge Railroad, to furnish plans and specifications for some powerful locomotives. This request was followed by a preliminary order for freight engines, which were shipped a few weeks ago. Now the firm has been advised that it will be awarded the contract for 200 locomotives, to be shipped as called for. The total value of this contract is placed at $1,500,000. About 3000 men are steadily employed at these works, frequently working two to three hours per day over-time. They are turning out an average of about ten locomotives per week, and in addition to the above have orders from nearly all the leading railways in the country.

The Empire Chain Works, in Philadelphia, are owned and operated by Messrs. Bradlee & Co. The works are 200 feet by 150 feet deep, and are situated at Nos. 816 to 826 Richmond street, adjoining the rolling mill of Hughes & Paterson, from whom they obtain transmitted power as well as material used in the manufacture of chains. This consists of a neutral iron, remarkable particularly for its toughness and elasticity. The firm runs 30 forges, employs from 75 to 100 men, and turns out some 150 tons of chain per month, varying from the smallest kind to cables 3 inches in diameter. The works are fitted up with all the latest improvements in the way of machinery and testing machines, and are at present engaged in filling contracts with John Roach & Sons, shipbuilders, William Cramp & Sons, shipbuilders, and with Harlan & Hollingsworth, Wilmington, Delaware. They are making cables for the steamer City of Worcester, now being built at Wilmington, a splendid vessel, which when completed will belong to the Norwich line of Sound steamers. The firm are also making 2¼-inch chain for use in dredging the Mississippi river, and for which they have a contract under the United States Government. Established in 1870, the present members of the firm are T. F. Dixon and Wm. Gerhard, both young and active business men. They do a large business throughout the country; are represented in New Orleans by Messrs. Woodward & Wight, and in New York by Cook & Co. Such is the demand for their manufactured products that increased space is required, and they are about to make extensive improvements on the Delaware river front.

A company is being formed in Columbia for the purpose of erecting a mill for the manufacture of steel tires, &c., from rail ends and old rails, under a process patented by Edward Edwards of that place.

The 75-ton hammer being put up by Magee & Anderson at the Old Fort Iron Works, Brownsville, lately purchased by them, will be ready for operation about the 1st of April.

The large furnace at Rodman has been blown out for repairs, which will be made shortly. The small furnace will be put in blast at once.

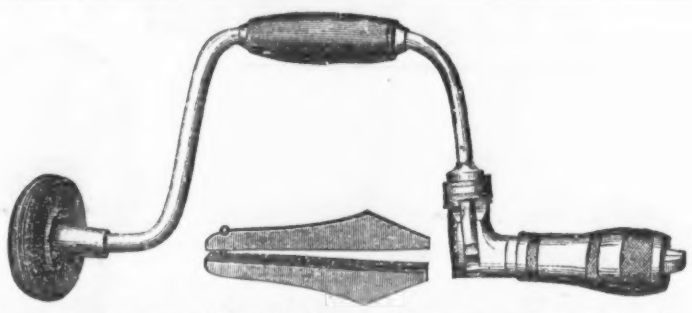
The Eames Iron Works at Titusville, which have been idle for nine months, have been started up night and day.

The Sheridan No. 2 Furnace of William Kaufman & Co. was put in blast on Saturday last, and is working exceedingly well.

It is reported that the Macungie Iron Company's Furnace will blow out some time this month to make necessary repairs. The repairs are to be made in short and quick order. They have been shipping iron pretty lively for the past week.

Messrs. Clark, Reeves & Co., are having built, at the Phœnix Iron Works, Phœnixville, a 270-foot draw-bridge, for Morgan's Louisiana & Texas Railroad at Berwick Bay. The structure will rest on wooden piles, which will be about 3 feet in diameter and 150 feet long. As it will be necessary to splice a long pile of wood, a wrought iron sleeve has been made in halves, edged with heavy angle iron and about 8 feet long, which will relieve the abutting ends of the piles and bind them securely together. The water at the point selected for the bridge is about 90 feet in depth and the piles will be driven about 50 feet into the river bottom. For the draw span alone there will be over 200 piles driven. This will be a huge undertaking, but this well-known bridge company is equal to the task.—*Reading Eagle.*

The Stony Creek rolling mill of J. H.



Though we have occupied this identical space in *The Iron Age* for more than twelve years, and though we have been the leading Bit Brace manufacturers of this country during all that time, we have seldom spoken of it in our advertisement, for the reason that all the leading dealers were supposed to know it. Since we first put

THE BARBER IMPROVED BIT BRACE

on the market, at least a dozen patent braces have run their race through the stores and junk stores, and are now forgotten. It is true, some of them died violent deaths, but most of them perished from constitutional weakness. We do not offer to meet competition, as no one else can make our Brace, and we have nothing to compete with. Others might if they would make their braces of steel, but it is much more expensive, and no one can tell the difference until the brace is put into use. All of our Nickel-Plated Braces are made of rolled steel, with forged steel jaws, which will never wear out. We formerly made malleable iron jaws, which in time wore out. All such we will now replace with steel for 25 cents per pair. They are all one size and will always fit. Our Ratchet Brace at the present time has no competitor in the market. Dealers who sell other styles of braces will find it to their interest to buy their stock of ratchets from us.

The price of Barber Braces has not been changed for many years, and we do not anticipate any variation in the near future. Thanking our customers for past favors, we now solicit their future orders.

MILLERS FALLS CO.,

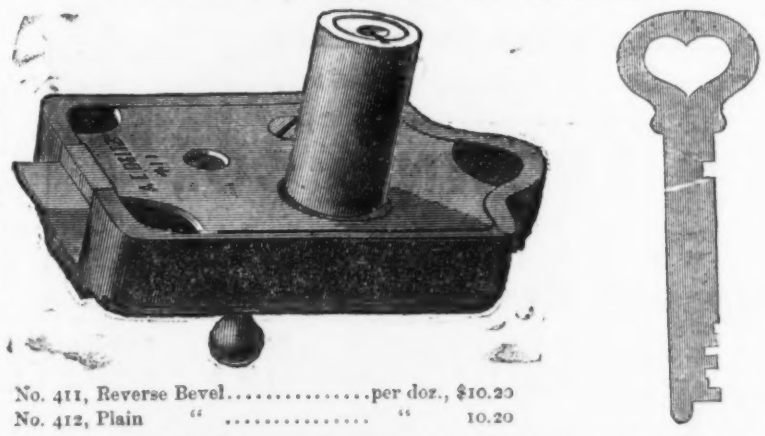
74 Chambers Street, New York.

A. E. DEITZ,

SCREEN DOOR LATCH,

For Screen Doors, Drawers, Cupboards.

CUT FULL SIZE.



No. 411, Reverse Bevel.....per doz., $10.20
No. 412, Plain " ..... " 10.20

Durrie & McCarty, Agents, 97 Chambers & 81 Reade Streets, NEW YORK.

HEATON & DENCKLA HARDWARE CO.,

Hardware Commission Merchants,

507 Commerce Street, Philadelphia.

E. & G. BROOKE'S "Anchor Brand" Nails, Brads, Spikes, &c.
MALLORY, WHEELER & CO.'S Door and Pad Locks.
UNION MANUFACTURING CO.'S Butts.
AMERICAN SCREW CO.'S Screws.
D. R. BARTON TOOL CO.'S Edge Tools, &c.
FRANCE'S Shutter Holders.
Anti-Window Rattlers, Brass and Nickel-Plated.
WESTERN FILE CO.'S Cast-Steel Files.
AMERICAN SHEAR CO.'S Shears and Scissors.
HP NAIL COMPANY'S Wire, Steel, Iron and Brass Nails and Barbed Nails.
TEELE & SONS' Wrought Handle Sad Irons.
EXCELSIOR MILLS. Genuine Turkish Emery.
BROWN & BRO.'S Silver Plated Spoons and Forks.
GAYLORD MANUFACTURING CO.'S Till, Chest and Cupboard Locks.
AMES' Genuine (A) Chester Emery.
COLWELL & COLLINS, NORWAY BOLT CO., Norway Carriage and Tire Bolts.
PLYMOUTH MILL CO.'S Black and Tinned Iron Rivets.
AMERICAN MACHINE CO.'S Fluters, &c.
STUART PETERSON & CO.'S Tinned and Enameled Ware, &c.

Also a large line of Heavy and Shelf Hardware.

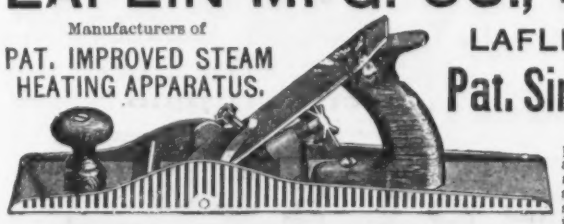
LAFLIN MFG. CO., Westfield, Mass.

Manufacturers of

PAT. IMPROVED STEAM HEATING APPARATUS.

LAFLIN MFG. CO.'S

Pat. Single Iron Plane



Made of extra quality iron. A practical labor-saving tool. Cuts against the grain equally as well as with it. Can be adjusted instantly to cut a coarse or fine shaving, and excels any double iron plane ever produced.

PATENTS

303 Euclid Ave., Cleveland, O. | TRACY, DYER & WILBER, Solicitors and Counsel in Patent Litigation | 519 Seventh St., Washington.

Send for "ALL ABOUT PATENTS," 140 Pages—Free.

GREEN'S PURE SILICA FIRE BRICK,

MADE BY

LACLEDE FIRE BRICK MANUFACTURING CO.,

SPECIALLY ADAPTED FOR

Pernot and Siemens Open Hearth Steel Furnaces and for Glass Furnaces.

Office, 901 Pine St., St. Louis, Mo.

RHODE ISLAND HORSE SHOE CO.,

MANUFACTURERS OF

Horse, Mule & Snow Shoes of the Perkins Pattern.

Works at Valley Falls, R. I., and Buffalo, N. Y. Office, 31 Exchange Place, Providence, R. I.

F. W. CARPENTER, President. C. H. PERKINS Gen'l Manager. R. W. COMSTOCK, Secretary

---

"UNION"

Door and Gate Spring.

SIMPLE, DURABLE AND ECONOMICAL.

The Objectionable Features of Other Springs Entirely Overcome.

We Make Four Sizes, viz.:
No. 5, For Screen and Light Doors.
No. 8, For Medium Weight Doors and Gates.
No. 7, For Large Doors and Gates.
No. 6, For Store Doors and Extra Heavy Gates.

As there are several Springs similar in appearance, but without our improvements, upon the market, see that you buy only the

"Union" Adjustable and Reversible.

MADE ONLY BY

The Edwards Manufacturing Company,

DETROIT, MICH.

WALKER'S

Forged Horse Shoes,

SHOENBERGER'S.

Patent Toe Calks,

Superior to any in market.

Send for prices and samples.

A. BUSSING, General Agent,

4 Warren St., New York.

PRIZE MEDALLISTS:

Exhibitions of 1862, 1865, 1867, 1872, 1873, and only award and medal for Noiseless Steel Shutters at Philadelphia, 1876, and Paris, 1878.

CLARK, BUNNETT & CO.,

LIMITED,

Late CLARK & COMPANY,

Original Inventors and Sole Patentees of

Noiseless Self-Coiling Revolving

STEEL SHUTTERS

FIRE AND BURGLAR PROOF. ALSO IMPROVED

ROLLING WOOD SHUTTERS

Of various kinds. And Patent

METALLIC VENETIAN BLINDS.

Endorsed by the

Leading Architects of the World.

Send for Catalogue.

Office and Manufactory,

162 & 164 West 27th St., N. Y.

PHOSPHOR-BRONZE!

PHOSPHOR-TIN!

Phosphor-Bronze is daily gaining favor with manufacturers who have to use a metal of great toughness and durability, of fine grain, high tensile strength and ductility, and is acknowledged far superior to any other alloy on account of the readiness with which it takes a polish, its elasticity, fluidity and beauty of color. Its high price, however, has so far prevented the use of it to so large an extent as its merit would warrant. For the first time an article is offered herewith which makes it easy for everybody to manufacture his own Phosphor-Bronze of the grade it is wanted, *by the simple process of melting.* This article is *PHOSPHOR-TIN.* By melting a very small quantity of it with copper an excellent Phosphor-Bronze is obtained at a much cheaper price than the ready made Phosphor-Bronze can be had in the market. A trial ought to be made by everybody who is using it.

A. KAUFMANN, 36 Park Place, New York,

Sole Agent for the United States and Canada. For pamphlets please address the above, P. O. Box 2110, New York.

EMPIRE STATE MFG. CO.

BUFFALO, N. Y.

Copper,
Half Copper,
Nickel Plated
TEA KETTLES.
Metal Spinning.

GEORGE W. BRUCE,

1 Platt St., New York, Proprietor of the

Atlantic Screw Works,

And Agent for the *Florence Tack Co.* and *C. A. Maynard.*

Maynard's C. S. Planters', Hilling and Hoe Hoes; Brady's Crown, Planters' and Hilling; Elwell's Weeding, Planters' and Grub, and a variety of other kinds for Home and Export Trade.

L. COES'

Genuine and Mechanics

PATENT

Screw Wrenches

MANUFACTURED BY

L. COES & CO.,

Worcester, Mass.

ESTABLISHED IN 1839.

Our Genuine Wrenches are made with straight bars, full width and enlarged jaw, having ribs cast inside, which strengthen the jaw and give a full bearing on front of bar. These improvements, in combination with our new ferrule, made with double bearings, an iron tube, fitted to the shank and resting against the lower bearings, rigidly held in position by the handle and nut, effectually preventing back thrust of ferrule (see sectional view), verify our claim that we manufacture the heaviest and strongest Wrench in the market. None genuine unless stamped

L. COES & CO.,

Worcester, Mass.

Warehouse,

97 Chambers and 81 Reade Sts.,

NEW YORK.

DURRIE & McCARTY,

Sole Agents.

CHAMPLAIN

Forged Horse Nails.

MANUFACTURED BY THE

NATIONAL HORSE NAIL CO.,

Vergennes, Vermont.

HOT FORGED AND COLD HAMMERED POINTED. MADE OF BEST NORWAY IRON AND WARRANTED.

A full line of "CHAMPLAIN" and "NATIONAL" Nails always on hand at our Warehouse,

97 CHAMBERS AND 81 READE STREETS, NEW YORK.

DURRIE & McCARTY, Sole Agents.

The 1881 Pennsylvania Lawn Mower.

OUTSTRIPS ALL COMPETITORS. PREMIUMS TAKEN OVER ALL OTHER MOWERS.

EVERY MACHINE WARRANTED TO WORK AS REPRESENTED.

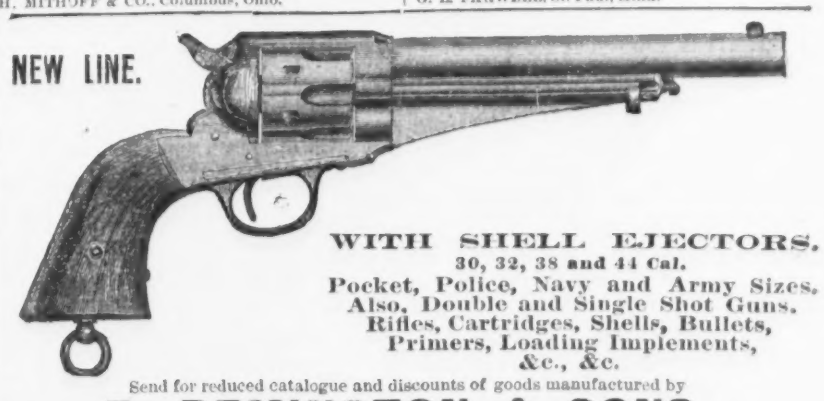
Also Manufacture the

BEST 10-INCH FORWARD CUT LAWN MOWER in the MARKET, named "QUAKER CITY."

For descriptive catalogue and prices write

LLOYD, SUPPLEE & WALTON, Philadelphia.
DURRIE & McCARTY, New York.
AMES PLOW CO., Boston, Mass.
PRATT & CO., Buffalo, N. Y.
SIMMONS HARDWARE CO., St. Louis, Mo.
HAMILTON & MATHEWS, Rochester, N. Y.
MARKLEY, ALLING & CO., Chicago, Ill.
H. MITHOFF & CO., Columbus, Ohio.
DUCHARME, FLETCHER & CO., Detroit, Mich.
LOCKWOOD, VAN DOORN & TAYLOR, Cleveland, O.
ANDERSON HARDWARE CO., Indianapolis, Ind.
WM. FRANKFURTH & CO., Milwaukee, Wis.
G. W. ROUSE, Peoria, Ill.
LLOYD & CLARKE, La Crosse, Wis.
T. M. CLARKE & CO., Atlanta, Ga.
G. L. FARWELL, St. Paul, Minn.

NEW LINE.



WITH SHELL EJECTORS.

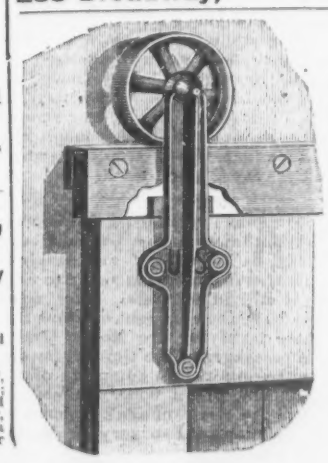
30, 32, 38 and 44 Cal.

Pocket, Police, Navy and Army Sizes. Also, Double and Single Shot Guns. Rifles, Cartridges, Shells, Bullets, Primers, Loading Implements, &c., &c.

Send for reduced catalogue and discounts of goods manufactured by

E. REMINGTON & SONS,

283 Broadway, - - - - NEW YORK.



THE U. S. WOOD TRACK

BARN DOOR HANGINGS.

Patented April 13, 1869: Reissued Jan. 11, 1881.

This patent covers all rail with a recess in the under side.

By using these Hangings you save the cost of iron rail.

They cannot be thrown off the track.

We also manufacture

Anti-Friction and Check-back Hangings, Rail, Stay Rollers, &c.

Send for price list.

MEDINA MANUFACTURING CO.,

SAMSON & SWETT, Props., Medina, N. Y.

Boone & Co., Norristown, last week produced the largest yield of finished plate iron ever made in one week at this mill, turning out 81¼ tons, including tops and bottoms.

Isabella Furnace, West Nantmeal, Chester County, which was compelled to go out of blast some time ago in consequence of having exhausted its supply of charcoal, will not, it is thought, be able to go into operation again until next fall. In the meantime some necessary improvements will be made, among which will be a new bellows, or blowing apparatus of some kind, and a new railroad from the Waynesburg Railroad to the furnace is likely to be constructed.

Furnace No. 1 of the Reading Iron Works, which went out of blast last summer, is being relined, and some alterations will be made in the construction of the furnace with the view to its improvement. The repairs will be completed in about six weeks. Furnace No. 2 is working splendidly, and yields about 280 tons of excellent iron per week. A roaster is being built to remove the sulphur from the ores obtained at the mines at Fritz's island and Boyertown. It will be completed and put into operation next week.

PITTSBURGH AND VICINITY.

Messrs. Shoenberger & Co., are erecting an addition to their works to cover their new 112-inch three-high plate mill and their other open-hearth steel furnace.

Messrs. Riter & Conley, workers in tank and sheet iron, are making for the two new blast furnaces which the Edgar Thomson Steel Company are erecting near their Bessemer works, what is believed to be the largest draft stack ever made in the United States. Its dimensions are as follows: Height, 220 feet; bottom diameter, 25 feet 4 inches; top diameter, 16 feet 6 inches. It will be set on a heavy cast-iron plate, which will be fastened to the foundation by 32 bolts, each 2½ inches in diameter and 28 feet long. The stack will have no guy. A draft stack 220 feet high and 25 feet 4 inches across the bottom is exceptional.

The Lucy Furnace Company is still running along with its new importation of Hungarian hands, who are pegging away regardless of the disapproval of the old employees.

The manufacture of steel rails, which has lately been experimented on at the Union Iron Mills, has proved a decided success, and the firm now intends going into the manufacture of them wholesale.

WEST VIRGINIA.

The Centre Foundry Company proposes to start up its works next week.

The Whitaker Iron Works goes on in full on Tuesday, after a lay off of two weeks.

OHIO.

Mr. D. M. Steward, manufacturer of soapstone crayons, at Cincinnati, has recently brought out soapstone crayons in an entirely new style, for use in rolling mills and for metal workers generally. They are neatly covered with labels cemented around them, and are gotten up with much taste. They present to the hardware trade a neat and excellent article. They are strong and durable, and very superior to common chalk for marking upon metals or rough surfaces; can be carried in the pocket with convenience. The cost of these crayons is no more than that of any other substance. Another shape of crayon for lining on boiler or other metal plates for shearing is quite an improvement in the recent productions of this establishment. Heavy orders are now being filled, which indicates large increase in the trade of iron and other metal workers throughout the United States.

Mr. Raymond Belt, of Logan, manufacturer of coal cars, blast furnaces and other machinery, is turning out quite a number of new coal cars to fill immediate and pressing demands of the miners of the Hocking Valley coal and iron region, and from other points at a distance. Mr. Belt's foundry and machine shops are models of perfection, being replete with all modern improvements and having large capacity. He is manufacturing his own patent steel and cast plows, orders for which are rapidly increasing, and as soon as the roads are passable he anticipates a heavy business in all branches of his manufacture.

Two capitalists from Pittsburgh have been in the city to-day with a view of purchasing the Alicama Iron Works, near this city. These works were sold last summer to a Pittsburgh party for $25,000, but one of the original stockholders refused to stand to the contract. There is but little doubt that a sale will be effected, as Pitttsburgh and Youngstown men are both anxious to purchase.—*Steubenville Telegram.*

Etna Furnace, Ironton, blew out on the 24th ultimo, in very good shape. She will put in a new hearth and undergo other repairs. She has done good work this blast, making almost 3000 tons of No. 1 cold blast.

Grant Furnace will blow in about the 1st of May.

The Ohio Steel Barb Fence Company, of Cleveland, are driving business to keep up with their orders. The barbed wire made by this company has been on the market for the past five years, and wherever used has given good satisfaction. They have renewed their business connection in New England, and John Wales & Co., Franklin street, Boston, are the selling agents for New England of the Ohio Steel Barb Fence Company.

The Buckeye Stove Company have filed articles of incorporation. The object of the company is the manufacture of stoves and hollow-ware. The capital stock is to be $20,000, divided into shares of 100 each. The principal works are to be located at California, Hamilton County.—*Boston Commercial Bulletin.*

The New York and Ohio Iron and Steel Co.'s Mill is still idle.

The Nes Silicon Steel Works, Sandusky, which have been idle since 1875, with the exception of some ten months recasting old rails, have resumed the making of steel rails. The company have orders for all the rails they can make for some time to come. Some 300 men are employed about the works.

The Central Machine Works, Dayton, so well known for their excellent steam pumps and hydraulic machinery, employ 15 hands and are in full activity. A good business is also being done in shafting, steam fittings and iron and brass castings.

The matter of organizing a company for the building of a Bessemer steel works in Youngstown is moving along very satisfactorily. The intention is to have a majority of the blast furnaces in this valley interested in the works, so that their products can be directly consumed by the steel works. Already the Brier Hill Iron and Coal Company have subscribed $100,000 stock to the new enterprise, and that the works will be built is a foregone conclusion.

Thos. J. Driskell & Co., at the Scioto Boiler Works, Scioto street, Columbus, employ about 30 hands in the manufacture of steam boilers and sheet iron work.

TENNESSEE.

The nail department of the Powell Iron Works, Chattanooga, are turning out 250 kegs of nails per day. A Chilian grinding mill for pulverizing ore was made for the Powell works last week by the Wilder foundry.

The Southern States Coal, Iron and Land Co. have taken an order for the cast and wrought iron work needed for the remodelling of the Alabama Furnace. Their foundry is turning out large quantities of car castings for railroad and furnace use.

Roane Iron Works, this city, are still running full force, double turn.

KENTUCKY.

The Norton Iron Works continue in full operation in all their departments, the furnace excepted, which will soon be ready for resumption.

The Ashland furnace continues doing well, running on all raw coal, making an average of 55 tons per day.

MISSOURI.

Bignall & Co., manufacturers of drive well points, emery grinders and iron-working machinery generally, report doing an exceptionally good business. Their pipe cutting, threading and bolt machines, the manufacture of which they make a specialty, are meeting with great favor and rapid sale.

The machine shops of J. C. Felber have been increased in capacity by the recent addition of several new pieces of fine iron-working machinery.

Two hundred tons of the iron girders and other portions of the framework of the roof of the Manhattan Market in New York city, destroyed several months ago by fire, lies sheared and ready for the furnaces at Helmbacher's Rolling Mills in this city.

The Kingsland & Ferguson Manufacturing Company, St. Louis, report that all indications received from correspondents throughout the South and West point to a large trade for the spring season. The present demand for saw mills is greater than ever before.

COLORADO.

A sugar refinery, now being erected for Claus, Spreckels & Co., in San Francisco, from plans by S. S. Hepworth, of New York, will cost $1,000,000.

CANADA.

Currie & Co., the ironmongers who lately failed for a large amount, have settled with their creditors for 50 cents on the dollar, cash, and 10 cents on time.

The Accident at the Red Jacket Furnace.

A correspondent of the Youngstown *Register*, writing from New Castle, Pa., says:

The particulars of the fatal accident at the Red Jacket Furnace are as follows: About 7 o'clock a. m. John Detweiler, an employee, was sent into one of the four huge boilers that belong to the furnace, to clean it out. He had been at work but a few minutes, when Sam Curry, the engineer, noticed that the rappings of his hammer had ceased. He looked in at the man-hole and saw the form of Detweiler lying in a heap, his lantern (which he had taken with him) still burning. Curry suspected gas or foul air, and at once called Charles Conn, another employee, and ordered him to go in and fetch out the lantern quick lest an explosion should ensue. Brave-hearted Conn did the bidding of his superior and handed out the lamp. He then went back to the limp body of Detweiler for the purpose of dragging it out and was in the act of lifting it up when he too fell insensible, overcome by the noxious gases. At this time John McIntyre, another employee, volunteered to go in and endeavor to bring out the bodies. He had laid hold of the body of Detweiler, when he succumbed to the life destroying fumes and became insensible. Now the excitement was intense. Three men were lying within the boiler in a dying condition, and death stared in the face any man who should dare to enter. What was to be done? Allow three human beings to perish and assistance so near at hand? With a spirit overflowing with humanity; with a daring and bravery rarely seen in the nineteenth century, one Wm. Joseph, a poor top-filler, threw off his hat and entered the tube. With undaunted courage, he took a rope, and advancing to the portion where the inanimate bodies lay, secured it around the form of McIntyre and called out to the men outside to pull, and as the body was dragged to the man-hole, Joseph held up the head to keep it from scraping on the bottom. When McIntrye was brought in contract with the fresh air he revived, the deadly gas not yet having done its work. The body of Conn was brought out in the same manner, but death had already claimed it. Joseph then brought out the body of Detweiler, but in doing so succumbed to the effects of the gas and fell prostrate. Fortunately he drooped near enough the aperture to admit those outside rescuing him from the very jaws of death.

The trial of the steamboat inspectors, Jayne and Mathews, in the United States Circuit Court, on a charge of manslaughter in connection with the burning of the Seawanhaka, is still in progress. Few additional facts have been brought out thus far. Among those testifying are Mayor Grace, who was a passenger at the time of the disaster, also the officers and engineers of the boat. Philip Maguire, a boiler maker, said he examined the Seawanhaka's boiler with hammer and lamp in February or March, 1880, at Roslyn, and discovered no defect. He expressed the opinion that a hydrostatic test inspection of the boilers could be made in 10 or 15 minutes. Assistant United States Attorney Fiero asked quickly: "Could a man look all the way through the 160 tubes in those boilers in that time?" The witness created a burst of laughter in court by instantly replying "I don't know as it would take any longer to look all the way through the tubes than it would to look half the way through them."

The New York subscription for the International Cotton Exposition at Atlanta was quickly raised to the full amount of $25,000 named as her quota.

Krupp, at Essen, is reported to be experimenting with the Osann dephosphorizing process.

THE SLAYTON RAZOR.

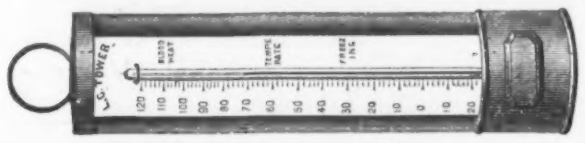
This cut is exact size of Razor.

PERFECTION FOR PORTABILITY. FOR CUTTING QUALITY. FOR TEMPER.

Handles of German Silver, Nickel Plated. Blades of the Finest Steel in the World. Every Razor Fully Warranted.

L. C. TOWER, Thermometer Manufacturer,

Canvassers Wanted. 39 Exchange St., Rochester, N. Y., Sole Agent.

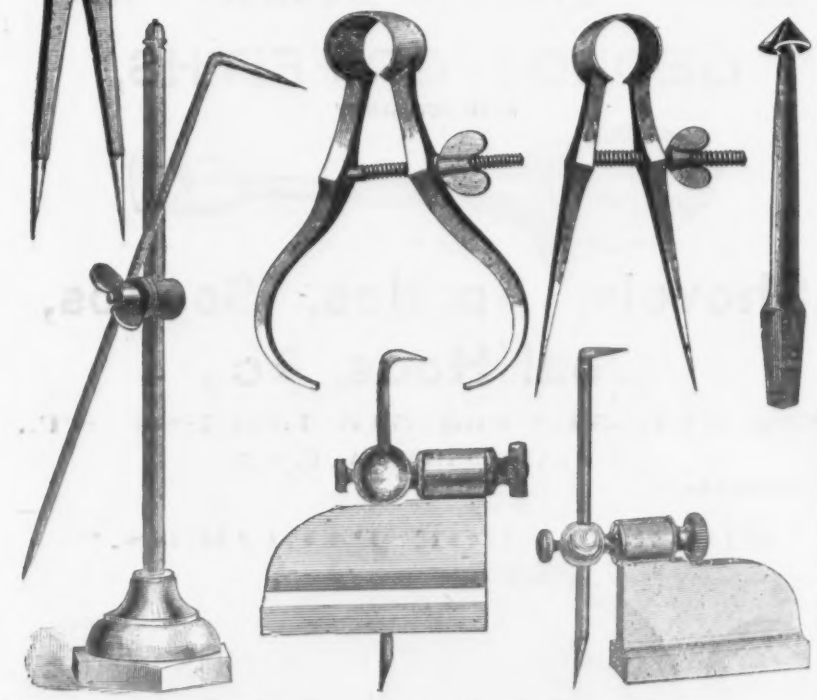


L. C. TOWER
Manufacturer of
Thermometers
Of Every Description,
Rochester, N. Y.

C. W. DUNLAP & CO.,
43 Chambers St., New York,
Manufacturers of
GARDEN TOOLS
AND
Housekeeping Hardware.

J. STEVENS & CO.,
Chicopee Falls, Mass. P. O. Box 224.
MANUFACTURERS OF
SPRING CALIPERS AND DIVIDERS.

Also, Surface Gauges and Counter Sinks, Stevens' Patent Breech-Loading Sporting Rifles, double and single barrel; Shot Guns, Pocket Rifles, Pocket Pistols, and the noted Hunters' Pet Rifles. Our Shooting Gallery Rifle is the favorite everywhere.

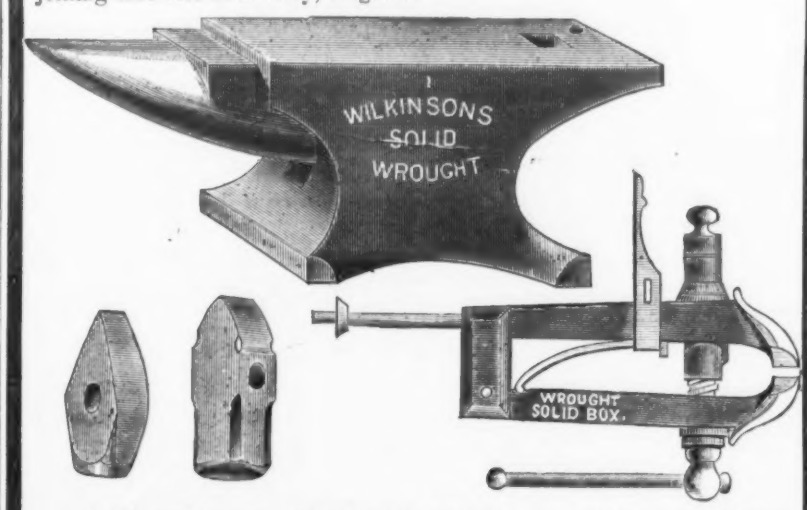


Wyoming Shovel Works,
WYOMING, LUZERNE COUNTY, PA.
Patent Plain Back Solid Shovels and Spades, Back Strap Shovels, Spades and Scoops.
RAILROAD AND MINERS' SHOVELS of Superior Quality a Specialty.
Send for Price List, &c. PAYNE PETTEBONE & SON.

ANVILS & VISES.

Joshua Wilkinson & Sons,
DUDLEY, ENGLAND.
Manufacturers of
Solid Wrought Steel Face Anvils,
Wrought Solid Box Vises,
Wrought Steel Face Hammers.

In quality and finish, and in the mode of manufacture, these goods are identical with "Wrights," being made by the same workmen in adjoining factories at Dudley, England.



A full assortment will be kept in stock by the Agents, and deliveries made in large lots, f. o. b. at Liverpool, New York or Philadelphia. Small lots delivered from Warehouse at Philadelphia only.

NEWLIN & YARDLEY,
Sole Agents for the United States,
PHILADELPHIA.
Agents for "CROWN" Crane Chains, and "Best Proved" Chains of all sizes.

NEW YORK DEPOT: 83 Maiden Lane.
THOMAS S. NEWLIN,
Agent for New York City and New England States.
Deliveries for Middle, Western and Southern States made from Philadelphia.

COLUMBIA BICYCLE.

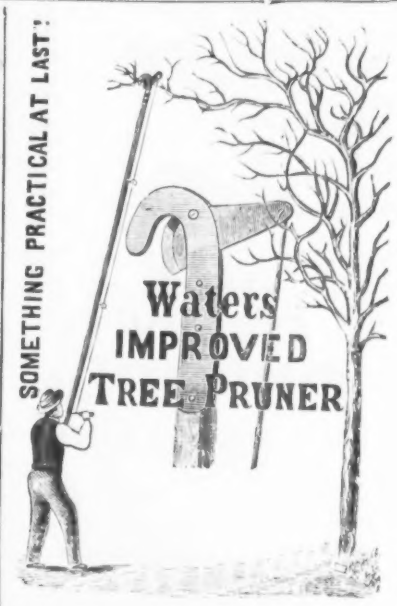
The Bicycle, as a permanent, practical road vehicle, is an acknowledged fact, and the thousands in daily use are constantly increasing in numbers. It combines speed and endurance that no horse can equal, and for pleasure or health is far superior to any other out-door sport. The art of riding is easily acquired, and the exercise is recommended by the medical profession as a means of renewing health and strength, as it brings into action almost every muscle of the body. Send 3-cent stamp for 24-page Illustrated Catalogue, containing price lists and full information.

THE POPE MFG. CO.
No. 597 Washington St.,
BOSTON, MASS.

ESTABLISHED 1836.
SHELTON & CO.,
Manufacturers of every variety of
TACKS & SMALL NAILS.
Carriage, Tire, Machine, Plow, Stove and Spring Bolts, Coach and Bed Screws, &c.
BIRMINGHAM, CONN.
Coulter, Flagler & Co., Agents, 87 Chambers Street, New York.

H. H. COLES & CO.,
446 North Twelfth Street, PHILADELPHIA.

NEW CHUCKING DRILL REST.
It will hold all sizes of drills up to 1¼ inches.
Price 60 Cents.



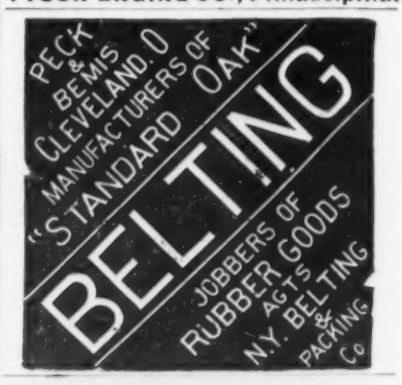
Tree and Hedge Trimmer.

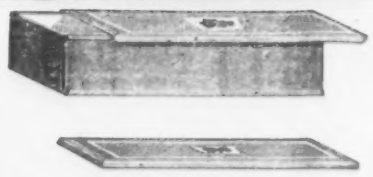
Unsurpassed for cheapness and durability. Unlike any other make, it combines a perfect lever principle with a blade working in a slotted steel hook.

E. S. LEE & CO.,
164 West Main St., Rochester, N. Y.

TYSON VASE ENGINE

Absolutely non-explosive under all circumstances and conditions. Cylinder, 1¼ inch bore, 2½ stroke.
PRICE, $50.
Weight, 60 lbs. Hight, 21 inches. Power, 1000-foot lb. per minute. Fuel, 12 feet gas per hour, or its equal in kerosene or gasoline.
For Dental Lathes, Scroll Saws, Sewing Machines, &c.
See *The Iron Age*, October 7, 1880.
TYSON ENGINE CO., Philadelphia.





WM. L. DAVIS, Chelsea, Mass.,
Manufacturer of
WINDOW WEIGHTS,
Sole Manufacturer of
Park's Patent Folding Lunch Box.

NEW MAKE OF MINE LAMP.

LEONARD BROS., Scranton, Pa.

THE AMERICAN ICE CREAM FREEZER

Is offered to the Trade as a novelty of its kind. It has all the advantages of he higher priced Freezers, but is considerably cheaper, owing to its simplicity. Its peculiar advantages over other cheap Freezers now in the market are :

A Cedar Tub, with Hoops of Galvanized Iron.
A Revolving Can,
A Self-Adjusting Scraper,
Ease of Removing and Replacing Can and Packing Ice,
Material and Workmanship of the very best.

Sizes.....	2-Quart.	3-Quart.	4-Quart.	6-Quart.
Price.....	$2.75	3.25	3.75	5.00 each.

THE CROWN ICE CREAM FREEZER.

SINGLE ACTION.

Is recommended with confidence as equal to the best Freezers in the market, with some meritorious advantages not found in others, prominent among which we mention:

The Tub is made strong and of the best quality Cedar, bound with Galvanized Iron Hoops.

The Gearing is completely covered, so that nothing can get between the Cogs.

The Cross-Bar is arranged to give the greatest facility for Packing Ice.

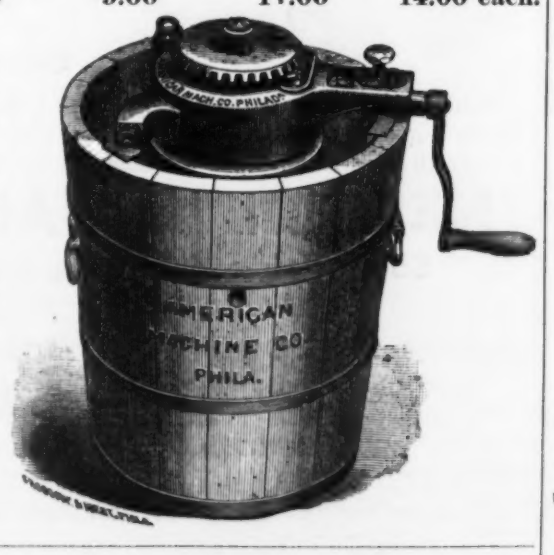
The Scraper is Self-Adjusting.

The Workmanship and Material are of the very best.

Sizes.....	2-Quart.	3-Quart.	4-Quart.	6-Quart.	8-Quart.	10-Quart.	14-Quart.
Price.....	$3.50	4.50	5.50	7.00	9.00	11.00	14.00 each.

DOUBLE ACTION.

Has all the advantages of our Single Action Freezers. Is made with either Crank or Fly-wheel. The Cross-bar is arranged to swing up on one side of Tub to remove Can, while the Fly-wheel remains stationary on opposite side of Tub, and does not require to be lifted with Bar, as in other makes of freezers. The Gear Shaft and Fly-wheel Shaft are connected by means of a clutch, which engages and disengages by simply raising or lowering the cross-bar.



Sizes.....	8-Qt.	10-Qt.	14-Qt.	18-Qt.	24-Qt.	32-Qt.
WITH FLY WHEEL		$16.00	20.00	25.00	30.00	37.50
WITH CRANK.....	$10.50	13.00	16.50	21.00	25.00	.....

AMERICAN MACHINE Co.

Manufacturers of Hardware Specialties,

N. E cor. Lehigh Av. and American St., Philadelphia.

New York Branch Store, 128 Chambers St.

SAML. G. B. COOK & CO.,

AMERICAN AND FOREIGN

HARDWARE

Manufacturers' Agents.

CUTLERY, CHAINS, &c.,

Nos 67 and 69 German Street,

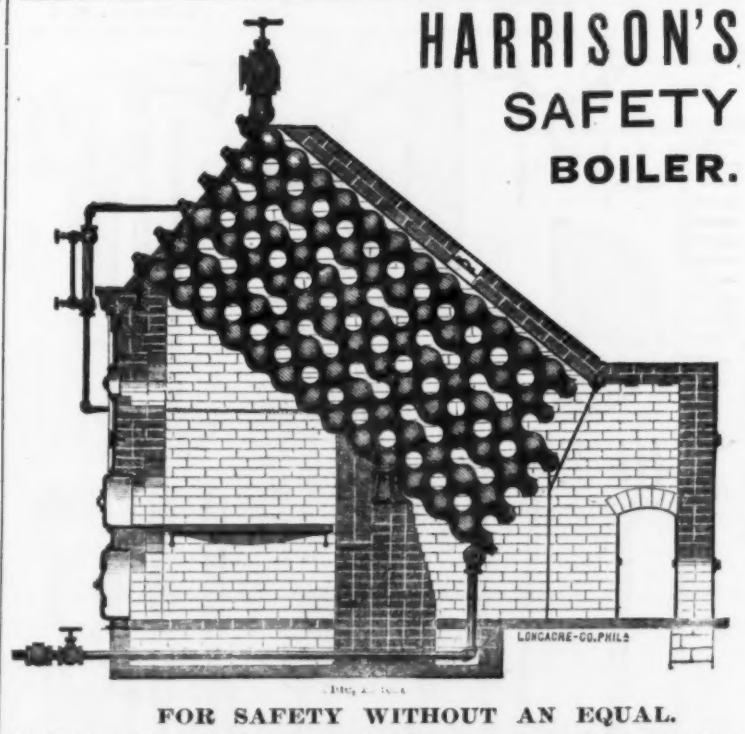
BALTIMORE, MD.

REPRESENT:

AMERICAN SCREW CO.
AMERICAN MACHINE CO.—Fluting Machines, &c
BRANFORD LOCK WORKS.
BARB FENCING WIRE.
BEARDSLEY SCYTHE CO.
"BOSS" MOLASSES GATES.
CARR, CRAWLEY & DEVLIN.—Hardware.
COWLES HARDWARE CO.—Spring Butts, &c.
CLARK M'F'G CO.—Blind Hinges and Latches.
H. CHAPIN'S SON.—Planes, Rules, Levels, Gauges.
JNO. CHATILLON & SONS,—Balances
CLARK BROS. & CO.—Carriage, Tire and other Bolts.
A. FIELD & SONS.—Tacks, Finishing and Shoe Nails.
HUBBARD, BAKEWELL & CO.—Axes
KIESER'S MEAT CUTTERS.
KLEIN, LOGAN & CO.—Picks, Mattocks, Grub Hoes, Hand and Sledge Hammers and Fire Shovels.
KIMBALL'S Patent Solid Cast Steel Shovels and Spades.
LOCKWOOD'S Patent Solid Steel Hoes.
LANCASTER BOLT CO.—Eagle Carriage Bolts.
LANCASTER CHAIN WORKS.
LAMSON & GOODNOW MANUFACTURING CO. —Table Cutlery, Butcher Knives, &c.
LAWSON & BRENIZER.—Hay & Manure Forks.
MERIDEN BRITANNIA CO.—Plated Ware.
WM. McNIECE.—Hand, Rip, Compass and other Saws.
NORTHWESTERN HORSE NAIL CO.
NICHOLSON FILE CO
NAUGATUCK CUTLERY CO.—Pocket Cutlery.
PECK BROS. & CO.—Brass Cocks.
PAYSON M'F'G Co.—Sash Fasts, &c.
PATTON M'F'G CO.—Enameled and Tin Hollow Ware.
ROY & CO.—Wrought Hinges and Butts.
ROGERS BROS.—A1 Plated Spoons, Forks, &c.
SARANAC, DRUID and INTERNATIONAL HORSE NAILS.
WILSON M'F'G CO.—Mills, Vises, &c.
WALKER'S Patent Horse and Mule Shoes.
And Other Manufacturers of Hardware.

Also, a full line of Joseph Rodgers & Sons', Wostenholms', and other makes of Cutlery &c.

HARRISON'S SAFETY BOILER.



HARRISON BOILER WORKS,

15th and Wood Sts., Philadelphia, Penn.

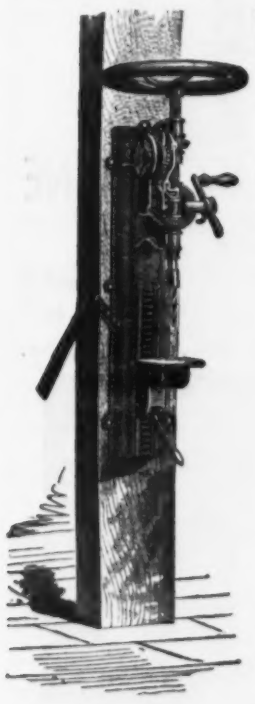
FOR SAFETY WITHOUT AN EQUAL.

Only Medal awarded by Franklin Institute Exhibition, 1874, for superiority of evaporative efficiency, economical capacity for generating steam and dynamic value of steam.

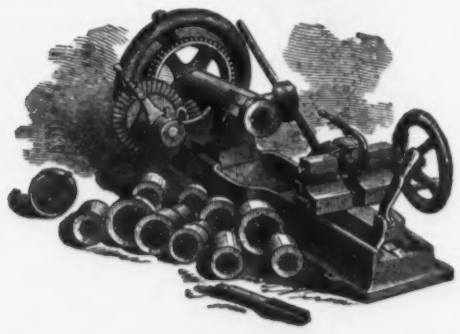
WILEY & RUSSELL MANUFACTURING COMPANY,

Greenfield. Mass.,

Lightning Screw-Cutting Machinery and Tools.



Bolt Cutters, hand or power.
Screw Plates, Taps, Dies and Reamers.
Green River Drills, hand or power, with Screw-cutting attachment.
Tire Benders, Upsetters, Measuring Wheels, Horse Shoers' Vises, &c., &c., &c.



Send for Illustrated Catalogue and Price List.

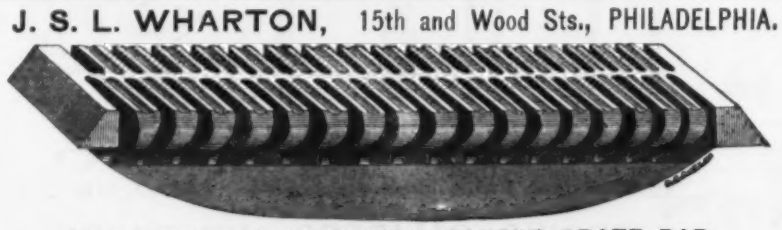
Taps and Dies for the Bit Brace.

Bit Brace Reamers for Wood or Iron.

Special Screw Plates for Model Makers, Carriage Makers and others.

Agents in London, England, Messrs. Selig, Sennenthal & Co.

J. S. L. WHARTON, 15th and Wood Sts., PHILADELPHIA.



Manufacturer of MAITLAND'S PATENT GRATE BAR.

CLAIMS—Increased air space, hence more thorough combustion and saving of fuel; less liability of warping; one bar fills space of four ordinary bars and weighs less in proportion. Send for price.

Established 1855. KEYSTONE WORKS. *Centennial Award 1876.*

GEORGE GRIFFITHS,

MANUFACTURER OF

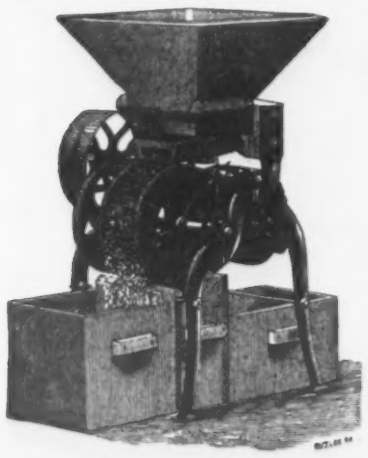
Shovels, Spades, Scoops, Coal Hods, &c.,

Nos. 511, 513 and 515 LOCUST ST.,

PHILADELPHIA, PA., U. S A.

Send for Price List.

B. FITTS' PATENT MAGNETIC METAL SEPARATOR.



MAGNETIC METAL SEPARATOR.

The accompanying cut represents a view of a recently invented machine for separating iron turnings, filings, &c., from brass, composition and other material.

Its capacity and utility for this kind of work surpasses anything ever before offered to the public, doing its work most thoroughly, and with the least amount of labor or trouble. The machine is not only a great labor-saving device, but brass stock treated with it is much improved, as it is thoroughly cleansed that it may be used for the best of work.

The machine may also be used for separating iron from emery

TESTIMONIALS.

From the Walworth Manufacturing Co., Boston.
BOSTON, Jan. 18, 1879.

Mr. Ezra Sawyer, Worcester: Of the many methods we have practised in separating iron from brass turnings and filings, we have found none equal to your machine. Very truly yours,
E. C. HAMMER, Treas.

From the Benedict and Burnham Mfg. Company, Waterbury, Conn.
WATERBURY, CONN., Aug. 19, 1879.

Ezra Sawyer, Esq., Worcester.—DEAR SIR: We hand you check for Metal Separator. It appears to do the work very well, and is quite a saving of labor over the old process of cleaning our washings, and metal having iron in the same. Yours, &c.
CHAS. BENEDICT.

From Union Water Meter Company, Worcester.
We have used one of B. Fitts' Patent Magnetic Metal Separators for eighteen months, and can recommend it as the best thing we have ever seen for separating metals, and have no doubt it has more than paid for itself in its use. UNION WATER METER CO.
WORCESTER, Sept. 1, 1879. J. C. OTIS, Treas.

From Peck Brothers & Co., New Haven, Conn.
NEW HAVEN, CONN., Sept. 3, 1879.

Ezra Sawyer, Esq.—DEAR SIR: We are pleased to inform you that the machine we purchased of you for cleaning our turnings and sweepings works admirably, and does its work thoroughly. It will very soon earn all it cost us. Respectfully yours,
J. M. PECK, Treas. PECK BROS. & CO.

From Rice, Barton & Fales Machine and Iron Co., Worcester, Mass.
WORCESTER, MASS., Sept. 4, 1879.

To Whom it may concern: We have had in use for several months one of B. Fitts' Patent Magnetic Metal Separators, and it gives us satisfaction, effecting a saving in time and material. Yours respectfully,
GEO. M. RICE, Treas.

From Brown & Brothers, Waterbury, Conn.
WATERBURY, CONN., Sept 4, 1879.

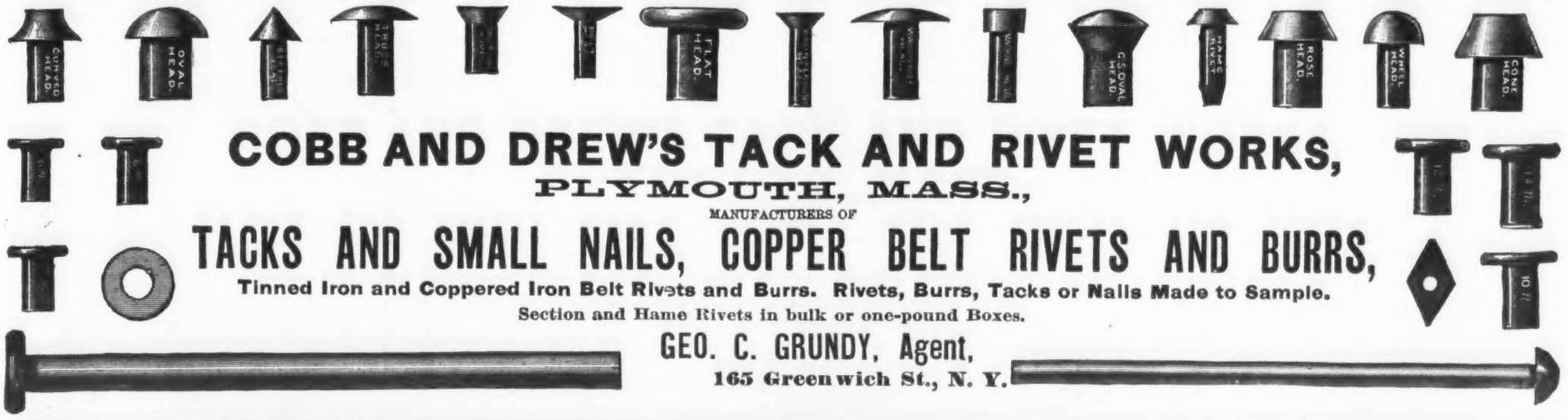
Ezra Sawyer, Esq., Worcester, Mass.—DEAR SIR: We have used your Magnetic Metal Separator several months; it works to our satisfaction, and we cheerfully give it our recommendation. Yours truly,
H. VAN DUSEN, Agt. BROWN & BROTHERS.

Manufactured by

EZRA SAWYER, 33 Hermon Street, WORCESTER MASS.

"HORSE SHOE PADLOCKS."

Made by **HORACE F. SISE,** New York



COBB AND DREW'S TACK AND RIVET WORKS,

PLYMOUTH, MASS.,

MANUFACTURERS OF

TACKS AND SMALL NAILS, COPPER BELT RIVETS AND BURRS,

Tinned Iron and Coppered Iron Belt Rivets and Burrs. Rivets, Burrs, Tacks or Nails Made to Sample.

Section and Hame Rivets in bulk or one-pound Boxes.

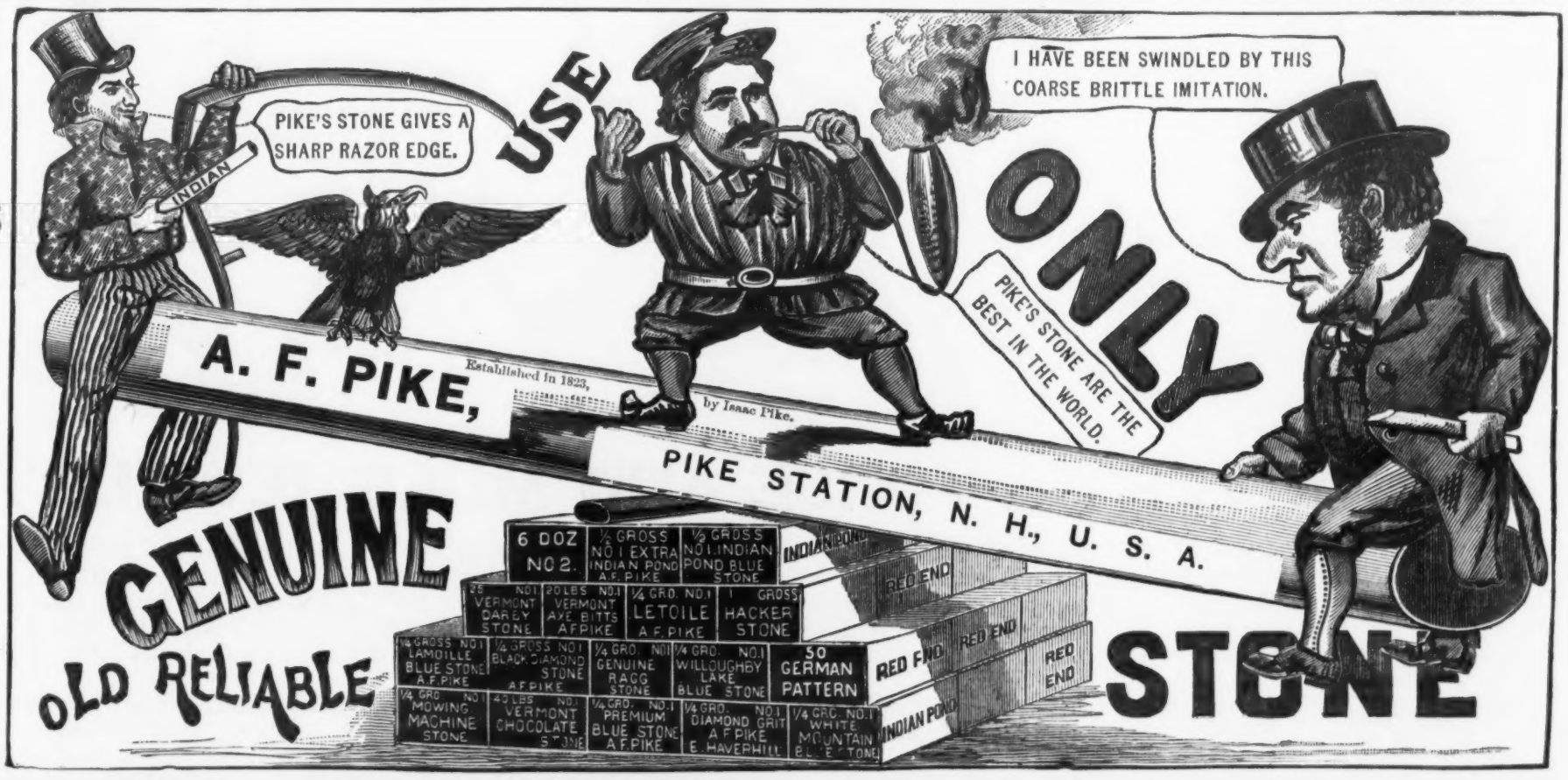
GEO. C. GRUNDY, Agent,

165 Greenwich St., N. Y.

LIST OF BRANDS

Old,
Reliable,
Indian Pond,
(Red End),
Premium,
Union,
White Mountain
Letoile,
Diamond Grit,
Fisherman (Rough),
Boss Hacker (Oval),
Lamoille,
Willoughby Lake,
Green Mountain,
Black Diamond,
Ragg (9 and 10 inch),
Mowing Machine,
Paper Mill Stone,
Vermont Darby,
Chocolate,
Axbitts,

WRITE ME FOR PRICES.



Office of STRIEBY & WARD,
Manufacturers of Carriage Makers' Forged Irons,
Newark, N. J., March 15, 1881.

Messrs. BEECHER & PECK:

GENTLEMEN: We have six of your Drop Lifters in constant use in our shop and we consider them well adapted to our class of work, coming fully up to all you claim for them.

Yours very truly,

(Signed) STRIEBY & WARD.

DOVER STAMPING CO.,
Factory Office, No. 153 Putnam Avenue,
Cambridge, Mass., March 22, 1881.

Messrs. BEECHER & PECK:

GENTLEMEN: All of our Drops are of your make and we have 15, all told. They have given us entire satisfaction in every way, and that they are all your make would seem a sufficient guarantee of how well we like them. Respectfully yours,

DOVER STAMPING CO.

(Signed) By E. H. WHITNEY.

Peck's Patent Lifter is the only Power Drop Lifter that has its parts cushioned. Being thus cushioned, they are the most durable Lifter in the market.

Our New Illustrated Catalogue sent on application.

BEECHER & PECK, 158 Temple Street, New Haven, Conn.

THE HARTFORD COMPRESSED-AIR PUMP.

Water Driven to any Hight and Distance by Compressed Air.

Country Houses Supplied Cheaply and Certainly for Bath Rooms, Water Closets, Hot and Cold Water Faucets, &c.

Plenty of Fresh Water for Stock on Farms.

The Best Pump for Irrigating, Supplying Railroad Tanks and for Mining Purposes.

This pump is being introduced into all the foreign countries, and is accepted by all mechanical men as the very best Pump in the market. It is more durable and needs less repairs than any other apparatus for like purposes, and is therefore the cheapest in the end, if not at first. Its advantages over other Windmills, Rams, and other contrivances for raising water, are quickly seen. For Circular and Price List address

THE HARTFORD COMPRESSED-AIR PUMP CO.,

EZRA BROOKS, Sec. and Gen'l Manager,

HARTFORD, CONN., U. S. A.

The Elastic Tip Co.'s Patented Specialties.

Boston Office, 157 Washington Street, {Corner of Cornhill,} BOSTON, MASS.

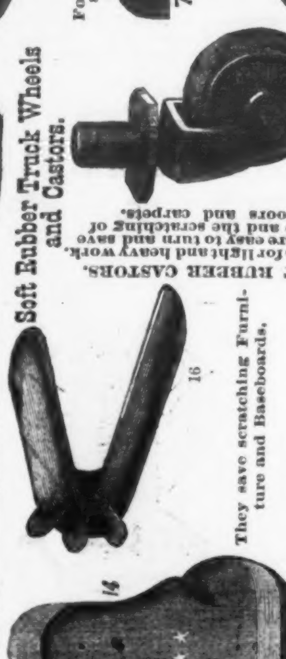
PATENT STEM CHAIR TIPS AND BUFFERS.
All sizes to suit the application.

CHAIR AND CRUTCH TIPS.

Nos. 17, 18, 19, 20 and 21 make the best and most economical crutch tip ever offered to the public.

When chair legs are too small to admit of boring, Nos. 17, 18, 19, 20 and 21 are used.

ROCKING CHAIR TIPS
Are applied on the sharp ends of Rocking Chairs.



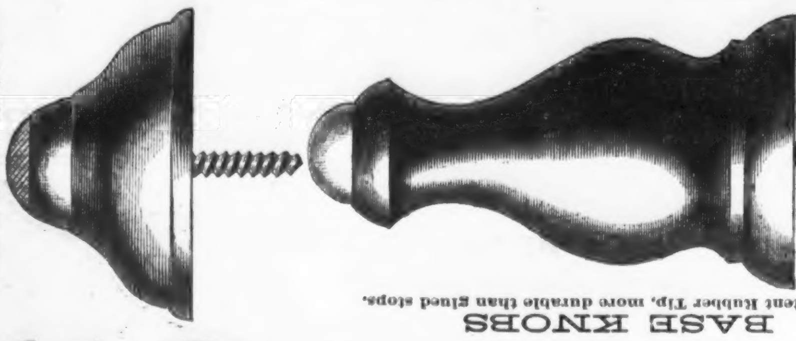
They save scratching Furniture and Baseboards.

Soft Rubber Truck Wheels and Castors.

SOFT RUBBER CASTORS.
All sizes for light and heavy work. They are easy to turn and save noise and the scratching of floors and carpets.

BUFFER TIPS
For desk lids, opera chairs, and piano makers' use.

FURNITURE FENDERS
For giving protection to Walls, Paper, &c. Easily applied to any piece of Furniture, such as the backs of Chairs, Sofas, &c.



BASE KNOBS
With Patent Rubber Tip, more durable than glued stops.

Rubber Handle Screw Driver.
No splitting the handles, besides they are more powerful than wood handles, because the hand will grasp the handles tighter.

This Cut shows the internal construction of the Screw-Driver Handles. It is impossible for the blades to ever get loose or turn in the handles, as their construction will show any one at a glance.

Rubber Handle Farrier's Knife.
Very easy in the hand. The blades are either narrow or wide, and are warranted superior in every respect.

RUBBER HANDLE HEEL KNIFE.
For cutting down heels. No jar is received if a blow is given to the knife, besides both the long and short blades are very desirable Knives for Boot and Shoe men.

ACENTS FOR THE ELASTIC TIP CO. IN DIFFERENT CITIES.

A. Hammacher & Co., 209 Bowery, New York.
Pitkin Brothers, 23 Charlestown St., Boston, Mass.
Fechtman & Gade, 205 Canal St., New York.
Eastern Rubber Co., 29 Milk St., Boston, Mass.
J. F. Eldridge & Co., 30 School St., Boston, Mass.
Geo. S. Saunders & Co. 155 Washington St., Boston, Mass.
Codman & Shurtleff, 13 Tremont St., Boston, Mass.
Geo. A. Rubelmann & Co., 821 N. Sixth St., St. Louis, Mo.
Henry L. Albee & Co., 36 Washington St., Boston, Mass.
Allen & Noble, 127 Washington St., Boston, Mass.
A. C. Eddy & Studley, 15 Westminster St., Providence, R. I.
Linus T. Fenn, 205 Main St., Hartford, Conn.
Alfred Hale, 300 Washington St., Boston, Mass.
Maurice E. Viele, 41 and 43 State St., Albany, N. Y.
Speyer Bros., 110 Bowery, New York.
Gardner & Chandler, 1321 Washington St., Boston, Mass.
Hall Rubber Co., 72 Federal St., Boston, Mass.
Goodyear's Rubber M'f'g Co., 492 Broadway, New York.
Salmon Washburn, Jr., Taunton, Mass.
Providence Furniture Co., Providence, R. I.
Boston Button Co., 88 Purchase St., Boston, Mass.
C. M. Clapp & Co., 183 Devonshire St., Boston, Mass.
Goodyear Rubber Co., St. Louis, Mo.
R. Levick's Son & Co., 724 Chestnut St., Philadelphia, Pa.
Goodyear Rubber Co., Washington St., Boston, Mass.
D. P. Dieterich's, 308 Chestnut St., Philadelphia, Pa.
C. Sidney Norris & Co., 36 Hanover St., Baltimore, Md.
Geddes & Keating, 716 Chestnut St., Philadelphia, Pa.
F. P. May & Co., 614 Pa. Ave., Washington, D. C.
Janney & Congdon, 8 N. Charles St., Baltimore, Md.
C. H. Flagg, 905 Broadway, New York.
Rubber Clothing Co., 341 Broadway, New York.
B. C. Tillinghast, 12 S. 2nd St., Philadelphia, Pa.
Goodyear's Rubber Curler Co., 729 Broadway, New York.
S. Allen's Sons, Greenfield, Mass.
Isaac C. Wright, 135 Main St., Fitchburg, Mass.
Goodyear Rubber Store, 522 Main St., Worcester, Mass.
Goodyear Rubber Store, 408 Main St., Springfield, Mass.
William Heaton, 503 Chestnut St., Philadelphia, Pa.
G. A. Marten & Co., 27 W. Washington St., Indianapolis, Ind.
Towner, Landstreet & Co., 224 W. Baltimore St., Baltimore, Md.
John W. Gray & Co., Hartford, Conn.
J. H. Bishop, Laporte, Ind.
Ranney & Hodgman, 42 East 3d St., St. Paul, Minn.
Gardner & Co., 183 Canal St., New York.
Heywood Bros. & Co., 204 Canal St., New York.
Hidden & Lounsbery, 100 Main St., Cincinnati, Ohio.
J. L. Wayne, Jr., 140 Main Street, Cincinnati, Ohio.
Glaescher & Co., 534 Main Street, Cincinnati, Ohio.
Bart & Hickcox, 96 West 4th Street, Cincinnati, Ohio.

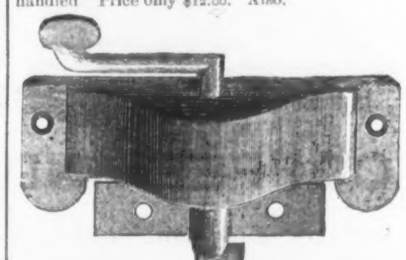
ACENTS WANTED.

Orders for the making of anything for the Rubber Trade solicited.

BLACKSMITHS, HARDWARE
MEN AND AGENTS SHOULD READ THIS.

LITTLE GIANT
WAGON TIRE UPSETTER

This machine is strong, durable and cheap, and is superior to all others for upsetting or shrinking wagon tires and bars of iron without cutting them. It will upset tires one inch at a heat, and is adapted to tires of any size or diameter. Every Blacksmith should have one; they are the best selling machines hardware merchants and agents ever handled. Price only $12.00. Also,



THE DUPLEX SEAT LOCK.

The best seat fastener ever invented. Light, strong, cheap, easily adjusted, and securely locks the seat to the wagon. Send for circular. Sample Lock sent postpaid on receipt of 25 cents.

LITTLE CIANTIMFC. CO.
Millport, Chemung Co., N. Y.

BEARDSLEY SCYTHE COMPANY, West Winsted, Conn.

Manufacturers of the well-known brands of

German Steel, Cast Steel and Silver Steel Grass Scythes.

ALSO THE

Clipper, Emperor, Beardsley's Golden Trimmer, Conqueror, Dutchman, Waldron, &c.

ALSO

Silver Steel, Clipper & Harvest Victor Grain Scythes,
Common Pattern & Spear Point Hay Knives.

ALSO

Corn Knives, Bush & Weed Scythes.

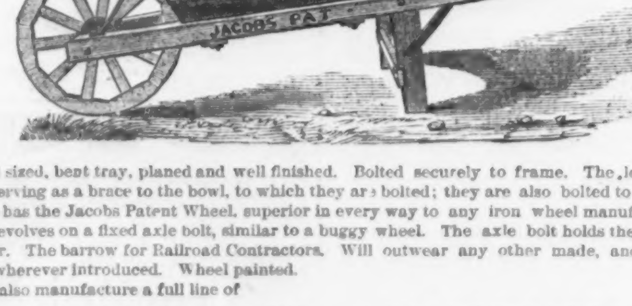
Carpet Sweeper Headquarters.

Handsomest, Noiseless, Most Durabl-, Ba st.
Liberal terms to Agents and Dealers.

E. B. PIKE,
47 India St., BOSTON, MASS.

RAILROAD OR CANAL BARROW,

With Jacobs' Patent Wheel.



Full sized, bent tray, planed and well finished. Bolted securely to frame. The legs extend upward, serving as a brace to the bowl, to which they are bolted; they are also bolted to handles. This Barrow has the Jacobs Patent Wheel, superior in every way to any iron wheel manufactured. The wheel revolves on a fixed axle bolt, similar to a buggy wheel. The axle bolt holds the barrow firmly together. The barrow for Railroad Contractors. Will outwear any other made, and displaces all others wherever introduced. Wheel painted.

We also manufacture a full line of

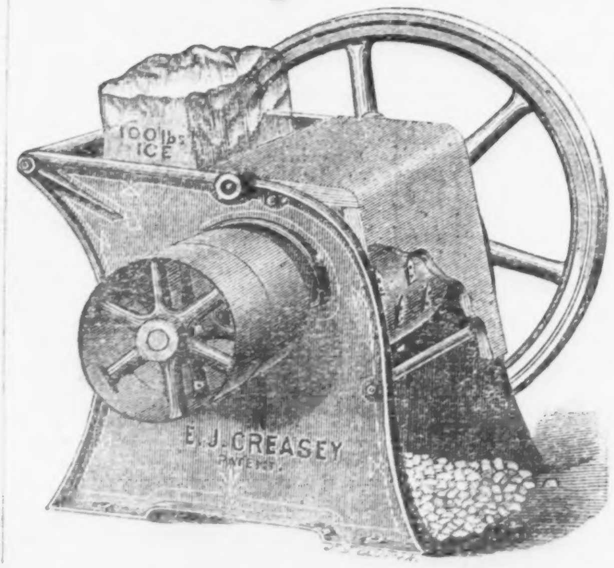
ORE, BRICK, STONE and GARDEN BARROWS.

ALSO.

Road Scrapers, Road Plows, Levelers, &c.

REVOLVING SCRAPER CO.,
COLUMBUS, - - - - - - OHIO, U. S. A.

Creasey's Ice Breaker.



In Use by
MEAT & FISH
Packers,
ICE CREAM
Makers,
HOTELS
AND
CONFECTIONERS.

FIVE SIZES.

Saves Time, Money and Labor.

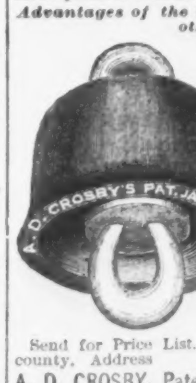
Send for Circular to

JOS. S. L. WHARTON, 15th and Wood Sts., Phila.

The Most Durable and Best Selling
Bucket for Chain Pumps.

It has no valves to become obstructed and no screw joints to become immovable by rust.

Advantages of the Crosby Bucket over all others:

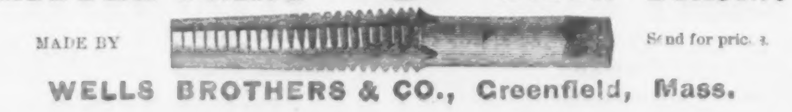


1. It has an air chamber on top, which conducts the air to the bottom of the well.
2. It is self-expansive, the base of the bucket being 1/4 of an inch larger at bottom than bore in the tubes, which allows it to expand, and the groove in the side to contract.
3. The wear comes on the whole side, and not on the extreme edge like other buckets.
4. It contains more solid rubber than three of any other manufactuie.

Send for Price List. Agents wanted in every county. Address

A. D. CROSBY, Patentee and General Agent,
Cuba, Allegheny Co., New York.

One Each STOCK, COLLET, DIE and TAP used in



LITTLE GIANT Screw Plates.

MADE BY

Send for prices.

WELLS BROTHERS & CO., Greenfield, Mass.

Torrey's Door Springs.
S. ROEBUCK & CO.,
Manufacturers,

164 Fulton St.,
NEW YORK.

Torrey's Patent
COG WHEEL

Ice Cream Freezers.

Torrey's Door Springs.

S. ROEBUCK & CO., Manufacturers
164 Fulton St., New York.

LOGAN & STROBRIDGE.

NEW FRANCO-AMERICAN

COFFEE MILL.

IS THE BEST MILL IN THE WORLD.

We also make Thirty different styles of

Strong, Handsome.

COFFEE AND CORN MILLS.

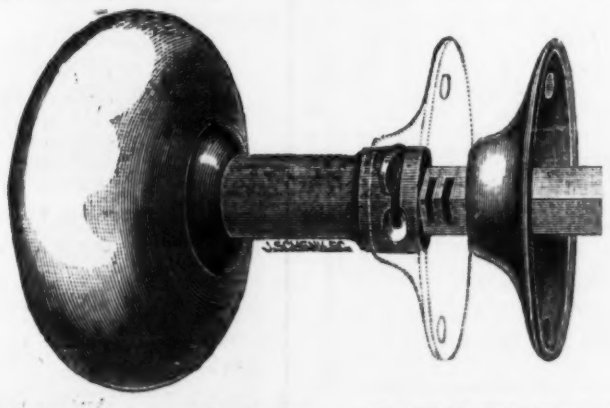
ALSO,

Builders' and Housefurnishing Hardware generally, and Light Castings of all kinds

Send for Catalogue and Prices.

NEW BRIGHTON, PENN.

IMPROVED FASTENING FOR



DOOR KNOB SPINDLES.

Patented May 21, 1872.

The above cut represents an important improvement for securing the Door Knob neatly and securely on the spindle without the use of screws. Architects, mechanics and dealers pronounce this device superior to anything of its kind in the market. In fact, no first-class Door Knob is complete without it. No extra cost to dealer or consumer.

Manufactured only by

THE CLARK MFG. CO.

Buffalo, N. Y.

HARCOURT PATENT.

BAGNALL & LOUD,

BOSTON, MASS.,

Sole Manufacturers in U. S. A. of our Celebrated

METALINE AND

Star Roller Bush Tackle Blocks.

Send For Illustrated Catalogue.

New York Warehouse, 33 South St.

STAR ROLLER.

PARAGON AXLE GREASE

MERIAM & MORGAN PARAFFINE CO.,

Cleveland, Ohio.

THE BEST GREASE For all kinds of Wagons, Threshers, Cog Gearings, Heavy Bearings, &c.

NEW YORK, 143 Front St,
BOSTON, 32 Olive St.,
CHICAGO, FERRIS & AVERY,
Agents, 48 No. Wells St.

OILS.

Wilson Bohannan,

Manufacturer of Patent

BRASS PAD LOCKS

For Railroad Switches, Freight Cars, and the Hardware Trade. All sizes, with Brass and Steel Keys with and without chains.

Patent Horizontal Rim Cylinder Night Latch.

Self-adjusting to doors of any thickness, with Patent Stop and Drawer Back knob RIGHT OR LEFT HAND.

PASSENGER CAR LOCKS, Bronzed, Nickel-Plated and Japanned.

☞ Catalogues and Samples sent upon application. BROOKLYN, N. Y.

PETER GERLACH & CO.,

MANUFACTURERS OF

Superior Cast Steel Saws

OF ALL DESCRIPTIONS.

ICE TOOLS, BUTCHERS' MEAT ROCKERS AND THE STANDARD STEEL FLUE SCRAPERS.

ALSO MANUFACTURERS OF

STRAIGHT AND BILGING CYLINDER STAVE SAWING MACHINERY,

For all kinds of Pail, Tub, Keg, Half Barrel, Barrel, Shook and Pipe Staves.

51 CENTRE ST., CLEVELAND, OHIO.

BUCKEYE LAWN MOWERS.

BEAUTIFUL IN APPEARANCE AND FINISH,
NOISELESS IN OPERATION AND EASY TO WORK,
SIMPLE IN CONSTRUCTION, YET
STRONG AND EFFECTIVE.

THE BUCKEYE JUNIOR LAWN MOWER
MANUFACTURED BY
MAST FOOS AND CO.
SPRINGFIELD, O.

The only successful LOW PRICED **LAWN MOWER** in the market.
Made in three sizes—10, 12 and 14 in. cut.

BUCKEYE SENIOR.
FIVE SIZES—10, 12, 14, 16, 18 IN. CUT.

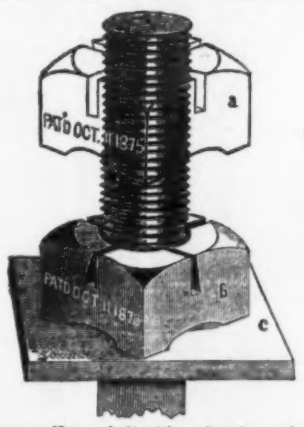
AGENTS.

EVERETT & SMALL, Poston, Mass.,
McINTOSH, GOOD & CO., Cleveland, Ohio,
BLACK & OWEN, Detroit, Mich.,
P. P. MAST & CO., Philadelphia, Pa.,
PAPPENHEIMER HDW. CO., Cincinnati, Ohio,
D. E. GOLDSMITH, San Francisco,
CHAS. A. GEORGE & CO., Providence, R. I.,
MAST, FOOS & CO., Liverpool, Eng.,
BRINTNALL, LAMB & CO., Chicago, Ill.,
ROGERS, ENGLE & CO., Dayton, Ohio,
LOEGLER & LADD, Buffalo, N. Y.,
DEERE, MANSER & CO., Kansas City, Mo.,
SEMPLE, VALLE & BURCHARD CUTLERY CO., St. Louis, Mo.
J. M. CHILDS & CO., Utica, N. Y.,
GEO. A. LOWE, Salt Lake, Utah,
DUFF & McKEAN, Pittsburgh, Pa.,
J. DAULTON, Paris, France.

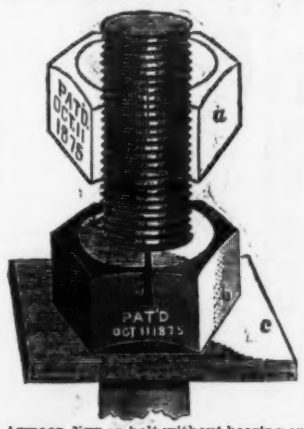
Correspondence solicited, and full information, with circulars, furnished on application to

MAST, FOOS & CO.,

Springfield, Ohio, U. S. A.



a, ATWOOD NUT on bolt without bearing on base—slots open.
b, ATWOOD NUT turned to bearing *c*, partially closing the slots, and grasping the bolt.



a, ATWOOD NUT on bolt without bearing on base—slot open.
b, ATWOOD NUT turned to bearing *c*, partially closing the slot, and grasping the bolt.

SPRINGFIELD, MASS., JULY 1, 1880.

DEAR SIR: The past four years have demonstrated the practical value of the "Atwood Safety Nut." It was patented from Springfield, Mass., and first put to work in its own town by practical and conservative mechanics and engineers. Safety Nuts put on the Boston and Albany Railroad car trucks, in the year 1875, have never had occasion to be tightened; neither have the bolts ever been loose in their work. Safety Nuts put on the track of the Boston and Albany Railroad have exceeded the trackmen's expectations. Every mechanic will comprehend at a glance, that its workings are in harmony with all accepted mechanical laws and principles; *i e*, the nut, instead of bearing in a straight line on the bolt (as the common one does) is, when turned home, forced towards the center of the bolt; and any strain on the bolt, after the nut is home, tends to act like the wrench turning it on. As the bearing corners of the nut being the highest—the top must incline towards the center of the bolt, clasping the bolt tightly. And the more strain on the bearing corners, the more resistance at the top. The nut will stand a harder turning from the wrench, without breaking the bolt, *as it is elastic*, while the common nut, being rigid, when it is brought to a bearing the thread must be overstrained in order to cause friction enough to stay to its place when first put on; and then, if any strain is put on it in the opposite direction, or between nut and head of bolt, the apexes of the thread are drawn over, leaving the nut loose on the bolt; or, if a Jam nut is used, the nuts will be found as when put on, but the bolt loose in its work. Remember, the "Atwood Safety Nut" never loosens, neither will the bolt loose in its work.

The Safety Nut is invaluable to every Railroad Company. Only one Nut is used. Its cost is less than the Jam Nut. The bolt is not required to be as long as when the Jam Nut is used. Time is saved in turning on and off; the bolt is always perfect and no loss of Nuts by jarring off along the road—thus saving money to those who use them.

The Boston and Albany Railroad were the first to use the Safety Nut, and are now putting it on to their ENGINES, CARS AND TRACKS.

We would respectfully refer you to the New York Central and Hudson River Railroad Co., New York. Also, Boston and Albany Railroad Co.: Wilson Eddy master mechanic; F. D. Adams, Supt. car department; W. H. Russell, chief engineer and road master; G. R. Hardy, ass't engineer. Other large railroads are now using the Safety Nut, to whom we will refer if desired.

We would like to have you try the Nut, and we are certain you will use it afterwards altogether.

Very repectfully yours, ATWOOD SAFETY NUT CO.
J. W. LABAREE, Sec. and Treas.,

OFFICE, ROOM 2, AGAWAM BANK BUILDING, Opposite Massasoit House, SPRINGFIELD, MASS.

THE TURNER & SEYMOUR MFG. CO.,

WOLCOTTVILLE, CONN.,

Manufacturers of

The "AMERICAN" and CLIPPER SHEARS, Celebrated FAMILY EGG BEATER, JUDD'S and other SHADE FIXTURES, PICTURE NAILS, and a large line of UPHOLSTERERS' and FANCY HARDWARE and METAL NOTIONS.

HOLIDAY GOODS.

We desire to call special attention to our line of

Nickel Plated Nut Picks, Nut Crackers and Fruit Knives.

They are fine in appearance, durable and very cheap. They are put up in sets in handsome imitation Morocco boxes, or any of the articles alone in common boxes.

We also have a fine line of

Nickel Plated Scissors,

and many other goods suitable for Holiday trade.

Price Lists and discounts furnished the trade on application.

WM. F. FOREPAUGH, JR. & BROS.

Manufacturers of SUPERIOR OAK TANNED

LEATHER BELTING.

N. W. Cor. Randolph and Jefferson Sts., PHILADELPHIA.

RIPLEY MANUFACTURING CO.,

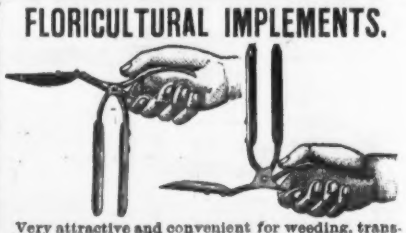
Unionville, Conn., U. S. A.

BEST PORCELAIN-LINED LEMON SQUEEZERS

"COMMON SENSE" MOUSE TRAPS.

HAND-MADE ROSEWOOD FAUCETS, &c., &c.

FLORICULTURAL IMPLEMENTS.



Very attractive and convenient for weeding, transplanting and cultivating. Send for circular and price list. **J. M. JONES, Palmyra, N. Y.**

LITTLE WONDER

and Shaped Diamond Carbon Points, indispensable for Truing Porcelain, Hardened Steel, Chilled Iron, and Paper Calender Rolls. Practical Mechanics and Paper Makers using them pronounce them a marvel of the age for efficiency and durability, doing that which no steel tool can do. After turning the Rolls, when inspected by a microscope, there is no perceptible wear. They are now extensively used in Rolling and Paper Mills, both in this country and in Europe. Send stamp for circular to

JOHN DICKINSON, 64 Nassau St., N. Y.

T. NEW'S PREPARED

ROOFING

For steep or flat roofs. Applied by ordinary workmen at one-third the cost of tin. Circulars and samples free.

T. NEW, 39 John St., New York.

BARRETT, ARNOLD & KIMBALL, Western Agts., Chicago, Ill.

HOWARD IRON WORKS,

BUFFALO, N. Y.,

Manufacturers of

BENCH VISES.

Price Lists sent on application.

STRONG'S UNIVERSAL SASH-LOCK

Secures the Window perfectly in any position. Burglar proof. The wind cannot rattle the windows.

Is attached to the Sash easily, without in the least weakening or defacing it. No holes to be cut in casings, no attachments thereto, no abrasion no matter how long used, nor how severely. Is never out of order. Address

Universal Sash-Lock Co.,

S. W corner Hamilton and Liberty Streets,

ALBANY, N. Y.

COVINGTON WIRE WORKS

FRED. J. MEYERS,

Manufacturer of

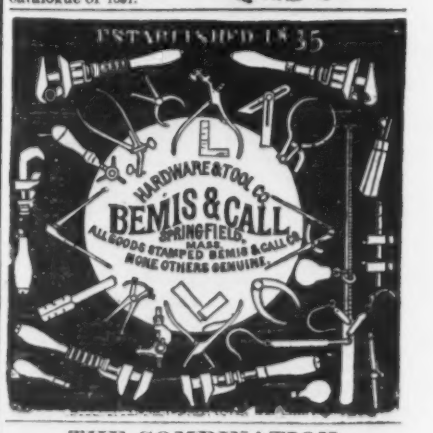
Champion Fly Traps,

(Under Harper & Parker Patents)

Dish Covers,
Cheese Safes,
Bird Cages,
Wire Counter Railings,
Wire Cloth of Every Description.

Office and Works,
419 & 421 Madison Street,
Covington, Ky.

Send for illustrated catalogue of 1881.



THE COMBINATION

IRON-CLAD STEEL HORSE SHOE CO.

Sole and Exclusive Manufacturers of

"Wheeler's Combination" Shoes, Bars & Toe Calks.

Full particulars upon application at office of the company, **84 Beach Street, Boston, Mass.**
All persons are cautioned against infringing.

Racine Boat

A REVOLUTION IN BOAT BUILDING.

For 25c. will mail section showing construction. Catalogue gratis.

THOMAS KANE & CO., Chicago, Ill.

The Iron Age Directory

and Index to Advertisements.

NEW YORK WHOLESALE PRICES, April 6, 1881.

METALS.

IRON.—DUTY: Bars, 1 to 1¼c. ₩ lb; Sheet, Band Hoop and Scroll, 1½ to 1¾c. ₩ lb; provided, that none of the above Iron shall pay a less rate of duty than 35 per cent. Pig, $7 ₩ ton; Polished Sheet, 3c. ₩ lb; Wrought Scrap, $8 ₩ ton; Cast Scrap, $6 per ton. Railroad, 70c. ₩ 100 lbs. Boiler and Plate, 1¼c. ₩ lb.

Iron—American

Foundry No. 1 .... ₩ ton $25.00 @ 26.00
" No. 2X .... ₩ ton 22.00 @ 23.00
Gray Forge .... ₩ ton 20.00 @ 21.00

SCOTCH.

Eglinton .... ₩ ton 21.50
Carnbroe .... ₩ ton 22.00
Coltness .... ₩ ton 21.00 @ 24.50
Glengarnock .... ₩ ton 22.50 @ 23.00
Gartsherrie .... ₩ ton 22.50 @ 23.00

Rails.

Iron .... ₩ ton $48.00 @ 50.00
Steel (at mill) .... ₩ ton 62.00 @ 65.00
Old Rails .... ₩ ton 27.00 @ 29.00

Scrap.

Wrought Scrap ₩ ton .... 30.00 @ 31.00

Bar Iron, from Store.—

Common Iron:
¾ to 2 in. round and square .... } ₩ lb 2.3c
1 to 6 in. x ⅜ to 1 in .... }
Refined Iron
¾ to 2 in. round and square .... } ₩ lb 2.4 @ 2.5c
1 to 6 in. x ⅜ to 1 in .... }
to 6 in. x ¼ and 5-10 .... ₩ lb 2.6 @ 2.7c
Rods—⅝ and 11-16 round and square .... ₩ lb 2.3 @ 2.6c
Bands—1 to 6 x 3-16 to No. 12 .... ₩ lb 2 @ 3.1c
Norway Nail Rods .... 6¼ @ 6½c

Sheet Iron.

	Common American	R. G. American.
10 to 20	₩ lb 3¾	5
21 to 24	₩ lb 3¾	5
25 to 26	₩ lb 4 c	5¼
27	₩ lb 4¼c	5½
28	₩ lb 4½c	5¾

	B. B.	2d qual.
Galvanized, 10 to 20	₩ lb 7½c	7c
" 21 to 24	₩ lb 8½c	7½c
" 25 to 26	₩ lb 9c	8c
" 27	₩ lb 9½c	8½c
" 28	₩ lb 10½c	9c

Patent Planished .... ₩ lb 11c; B, 10c
Russia .... 11½ @ 12½c
American Cold Rolled .... ₩ lb 5 @ 7½c

COPPER.—DUTY: Pig, Bar and Ingot, 5c; Old Copper 4c lb; ₩ Manufactured (including all articles of which Copper is a component of chief value), 45 % ad valorem.

American Ingot .... ₩ lb See Trade Report

SHEATHING, BRAZIERS COPPER, BOLTS, &c.

Braziers' Copper, ordinary sizes, 16oz. per sq. ft., and over per lb 28c
Braziers' Copper, ordinary sizes, under 16 oz. and over 12 oz., ₩ sq. ft .... ₩ lb 30c
Braziers Copper 10 oz and 12 oz., ₩ sq. ft .... ₩ lb 32c
" " Lighter than 10 oz. ₩ sq. ft .... ₩ lb 34c
Circles less than 84 in. in diameter .... ₩ lb 31c
Circles 84 in. diameter and over .... ₩ lb 34c
Segment and Pattern Sheets .... ₩ lb 31c
Locomotive Fire Box Sheets .... ₩ lb 28c
Sheathing Copper, over 12 oz. ₩ sq. ft .... ₩ lb 26c
Bolt Copper .... ₩ lb 28c
Copper Bottoms .... ₩ lb 29c
No Copper is Sheathing except 14 x 48 inches and not to exceed 34 oz. to the sq. ft.

TINNING.

14 x 48 .... ₩ sheet 6c
All other size Sheets, 2½c. per square foot.
For tinning both sides, double the above amount

O'NEILL'S PATENT PLANISHED COPPER.—Net.

14 x 48.

14 and 16 oz. and heavier ₩ lb 36c By the case, ₩ lb 35c
12 oz. and lighter ₩ lb 39c " " ₩ lb 38c

Boiler Sizes.

7 in., 14 x 52. 8 in., 14 x 56. 9 in., 14 x 60.
14 and 16 oz. and heavier, ₩ lb 38c By the case, ₩ lb 37c
(And all sizes not over 20 in. wide.)

30 x 60.

14 and 16 oz. and heavier .... ₩ lb 40c
2 oz .... ₩ lb 43c

Brass.

Brown & Sharp's Gauge the Standard for Metal. Old English Gauge the Standard for Wire.

BRASS MANUFACTURERS' PRICE LIST—dis 20%.

June 10, 1880.

Cash prices for Roll and Sheet Brass. For less quantity than 100 lbs. add 30 ₩ lb.

HIGH BRASS.

All Nos. not thinner than to No. 28, wider than 2 in., not wider than 14 in 30c
All Nos. to No. 28, inclusive, and widths over 14 to 20 in., inclusive 35c
All Nos. to No. 28, inclusive, and widths over 20 to 30 in., inclusive 38c
½c ₩ lb advance on each No. above Nos. 28 to 38, inclusive.
All Brass thinner than No. 38 is Platers' Brass, at ... 53c
Sheets 24 x 48, and all sheets cut to particular sizes and lengths under 30 in., in width wider than 2 in. 37c
Printers' Rules 45c
Sheets wider than 30 in. and under 40 in 47c
" 40 in. and over 50c
Circular Sheets, in diam. from 4 in. to 14, inclusive. 40c
" " over 14 " 20, " .. 45c
" " " 20 " 30, " .. 49c
" " " 30 " 40, " .. 55c
" " " 40 in 59c

LOW BRASS.

4c ₩ lb more than High Brass.
Gilding Metal, 8c ₩ lb more than High Brass.
Platers' or Gold Metal { In Bars .... 48c / Sawed .... 51c / Planed or Polished 54c

FOR SLITTING.

Metal in width ½ in. to ⅛ in. to No. 28, inclusive, 1c. ₩ lb advance.
Metal, in width 2 in to 1 in. thinner than No. 28, 2c. ₩ lb advance.
Metal, in width 1 in. to ⅛ thinner than No. ₩ lb advance.
Metal, in width ⅛ in. to ¼, inclusive, not thinner than No 28, 2c. ₩ lb advance.
Metal, in width ⅛ in. to ¼ thinner than No. 28, 5c. ₩ lb advance.
Metal, ¼ in. in width and less, 10c. ₩ lb advance.
Any of the above widths cut to particular lengths, add 7c. ₩ lb.

GERMAN SILVER MARKET METAL AND WIRE.

	Market Metal.	Wire.
4 per cent., 12 inch, to No. 26	$0.52	$0.70
6 "	.56	.76
10 "	.64	.88
15 "	.74	1.03
18 "	.80	1.12

German Silver Sheets over 12 in. wide and weighing more than 10 lbs., $2.00 ₩ lb.
Advance 2c. for each additional inch in width above 12 in., and 2c. ₩ lb on each No. thinner than Nos. 26 to 36, inclusive.
All German Silver thinner than No. 36 is Platers, at 50c ₩ lb additional.
German Silver Scrap one-half less than net price of 4 in Market Metal. German Silver Turnings, Filings and Chips, half the price of Scrap.

BRASS AND COPPER WIRE.

	High Brass.	Low Brass.	Gild'g and Copper.
No. 0 to 20	$0.33	$0.37	$0.43
No. 21	.36	.40	.46
No. 22	.37	.41	.47
No. 23	.38	.42	.48
No. 24	.40	.44	.50
No. 25	.43	.47	.54
No. 26	.46	.49	.55
No. 27	.48	.52	.58
No. 28	.52	.56	.63
No. 29	.55	.59	.66
No. 30	.58	.63	.72
No. 31	.62	.66	.78
No. 32	.66	.70	.84
No. 33	.70	.74	.93
No. 34	.74	.78	1.03

Spring Wire 2c ₩ lb advance.
Flat, Square and Half Round Wire 5c ₩ lb advance on Round Wire.
Fancy Wire not less than 10c ₩ lb advance of Round Wire.
Brass Rods, No. 8 and larger, not less than 2 feet lengths, 38c.
Wire straightened and cut, smaller than No. 8, and not less than 2 feet lengths, 43c.
Wire and Rods less than 2 feet lengths, special rates
Twelve cents per lb extra for spooling on 1 lb spools.

MISCELLANEOUS.

Brass Pail Ears $0.50
Brass Door Rail .... .43

SCRAP.—dis. 20 %

High Brass Scrap 12c
Low " 14c
Gilding 10c
Turnings, Filings and Chips half the price of Scrap.
Terms—Net cash. Interest to be added after thirty days.

TUBING.—dis 20 % ₩ lb

Plain No. 2 inclusive above ¼ in. to 3 in $0.43
" above 3 in .... .53
Nos. 21, 22, 23, two cents advance on List for each Number.
Nos. 24, 25, 26, four cents advance on List for each Number.
Above No. 26, special rates.
Plain, ⅛ inch .... .70
" 3-16 .... 1.10
" ⅛ 1.00
All Mandrel Drawn Tubes, 5 cents advance on List Prices.
Fancy Tubing to No 20 .... 50c
English, Scotch and Extra Patterns Fancy Tubing to No. 20 .... 55c
Tubing Sawed or Cut 2 to 4 feet long, 2 cents advance on List
Add to 2 cents ½ cent for each additional cutting under 2 feet.
All Mandrel Drawn Tubes under ⅜ in. 25 cents per pound advance.

ZINC TUBING—dis 20 %.

Plain .... .27
Fancy .... .33
Scotch and Extra Patterns 30

GERMAN SILVER TUBING.—dis 10 %

4 Per cent	.80
6 "	.90
9 "	1.05
12 "	1.20
15 "	1.35
16 "	1.40
18 "	1.50
20 "	1.60

STEEL.—DUTY: Bars, Ingots, Sheets and Coils valued at 7 cents ₩ lb., or under, 2¼ cents; over, 7 cents, and not above 11, 3 cents ₩ lb; over 11, 3½ cents ₩ lb, and 10 % ad val. Railway Bars, 1¼ cents ₩ lb. Railway Bars, in part Steel, 1 cent ₩ lb. Provided, that Metal cemented, cast or made from Iron by the Bessemer or pneumatic process, of whatever form or description, shall be classed as

American Cast Steel.

For American Steel see quotations under heading of Pittsburgh.

English Steel.—

" Best Cast .... ₩ lb 15½c
" Extra Cast .... ₩ lb 16½c
" Round Machinery, Cast .... ₩ lb 10c
" Swaged, Cast .... ₩ lb 18c
" Best Double Shear .... ₩ lb 15½c
" Blister, 1st quality .... ₩ lb 13c
German Steel, Best .... ₩ lb 11c
" 2d quality .... ₩ lb 10c
" 3d quality .... ₩ lb 9c
Sheet Cast Steel, 1st quality .... ₩ lb 15½c
" 2d quality .... ₩ lb 14½c
" 3d quality .... ₩ lb 12½c

ANTIMONY .... See Trade Report.

LEAD.—DUTY: Pig $2 ₩ 100 lbs; Old Lead, 1½c ₩ lb; Pipe and Sheet, 2½c ₩ lb.

American .... 5¼ @ 5½c
Bar .... 6c net
Pipe .... 6½c dis 10 %
Tin Lined Pipe .... 15c. dis 10 %
Sheet .... 7c. dis 10 %
Shot .... Drop 7½c, Buck, 8¼c
Chilled Shot 8½c

BABBITT METAL.

N. P. U. .... ₩ lb 7½ @ 8c
A 25c; B, 20c; C, 15c.

TIN.—DUTY: Plates, Sheets, Tagger and Terne, 1.1c ₩ lb; Electro-galvanized Plates, 2c ₩ lb; Manufactures of, not enumerated, 35 per cent. ad. val. Bars, Block and Pigs free. Banca, subject to duty of 10 per cent.

Banca .... ₩ lb 25 @ 26c
Straits .... ₩ lb 22 @ 22½c
English .... 22 @ 22½c

TIN PLATES.

I C 10x14, 14x20 { Prime Charcoal .... $6.25 @ $6.50
I C 12x12 " .... $6.50 @ 6.75
I X 10x14, 14x20 { Charcoal 8.25
I X 12x12 " " 8.50
D C 12½x17 .... 5.75
D X 12½x17 .... 7.75
For each additional X add 2.00

COKE TIN PLATE.

	Best.	Ordinary.
I C 10x14, 14x20	$6.00	5.25 @ 5.75
I C 12x12	6.25	5.50 @ 5.75

TERNE PLATE.

	Prime Char.	2d qual.	Coke.
I C 14x20	$5.75	5.50	5.25
I X 14x20	7.50	....	....
I C 20x28	11.50	11.00	10.50 @ 11.00
I X 20x28	15.50	....	....
I C 20x200	19.00	....	....
I C 14x20 M. F. Brand			7.50

SOLDER .... No. 1, 12c @ 13c; No. 2, 11c

SPELTER—DUTY: In Pigs, Bars and Plates, $1.50 ₩ 100 lbs.

American, cash .... 5½ @ 5½c
Bergen Port from Lehigh Ore 11c
Lehigh, on spot 6c

ZINC.—DUTY: Pig or Block, 1.50 ₩ 100 lbs. Sheet 2½c ₩ lb.

Sheet, Cask .... 7 @ 7½c
" Open .... 7½ @ 8c

Paper Stock, &c.

(*Dealers' Selling Price.*)

White Shirt Cuttings, No. 1	6½ @	6¾
" No. 2	5 @	5¼
Mill Assorted Whites	5½ @	5¾
Unbleached Muslins	6½ @	6¾
City Whites, No. 1	4¾ @	5
New Canton Flannels	6 @	6¼
New Seconds, light	4½ @	4¾
" dark	3¼ @	3¾
No. 2, Whites	2¾ @	3
Cotton Canvas	4¼ @	4½
Linen Canvas, No. 1	4¼ @	4½
Seconds, City No. 1	2¼ @	2½
" " No. 2	1½ @	1¾
Colors, per 100 lbs	85 @	90
Manila Rope	3¼ @	3½
" Tarred	2¼ @	2¾
Gunny Bagging, No. 1	2¾ @	3¼
" No. 2	1¾ @	2
Kentucky Bagging	4¾ @	....
Burlap Bagging, No. 1	2¾ @	3¼
Tar Shakings	2 @	2¼
Hemp Twine Stock	4½ @	4¾
Hard White Shavings, No. 1	4 @	4¼
Soft White Shavings, No. 1	3¼ @	3½
White Shavings, No. 2, soft	3 @	3¼
Mixed Shavings, part white	1½ @	1¾
Ledger and Writing	3 @	3¼
Solid Stock	3¼ @	....
Book Stock, No. 1, light	1½ @	1¾
Old Newspapers	2½ @	2¾
Pure Manilas	2½ @	2¾
Bogus Manilas and Hardwares	1½ @	1¾
Commons	90 @	....
Binders' Board Cuttings	1½ @	1¾
Straw Board Cuttings	1½ @	1¾

Paints, Oils, &c.

Paints.

Black Lamp, Coach Painters .... ₩ lb 20c
" " Ordinary 6c
" Ivory Drop, fair .... 12 @ 14c
" " best 20c
Black Paint, in oil .... kegs 8c asst'd cans, 11c
Blue Prussian, fair to best .... 40 @ 55c
" " " " in oil .... 45 @ 55c
Blue Chinese dry 85c
" Ultramarine .... 18 @ 40c
Brown, Spanish 1½c
" Van Dyke .... 10 @ 12c
Green, Chrome .... 15 @ 23c
" " in oil .... 14 @ 18 @ 24c
" Paris .... good, 25c; best, 31c
" " in oil .... " 30c; 41c
Iron Paint, Bright Red .... ₩ lb 2½c
" Brown .... ₩ lb 1½c
" Purple .... ₩ lb 3c
" Ground in Oil, Bright Red .... ₩ lb 5½c
" " " Red .... ₩ lb 5c
" " " Brown .... ₩ lb 4½c
" " " Purple .... ₩ lb 6c
Mineral Paints .... 1½ @ 4c
Orange Mineral 10c
Red Lead, American 7½c
" Venetian (N. C.) dry .... $1.64 @ $1.70
" " in oil .... asst'd cans, 11c; kegs, 8c
" Indian dry .... 9 @ 12c
Rose Pink .... 10 @ 13c
Sienna, American, Raw 4c
" Burnt 4c
" " in oil .... 10 @ 16 @ 20c
" Raw .... 11 @ 14 @ 25c
Umber, Burnt .... 4 @ 8c
" " in oil .... 9 @ 12 @ 16c
" Raw .... 3½ @ 7½c
" " in oil .... 10 @ 16 @ 18c
Vermillion, Chinese 90c
" English .... 55 @ 57½c
" Trieste 1.10c
" American, Common 15c
White Lead, American, pure dry .... 6¾ @ 7c
" " " in oil 7½c
White, Paris, English, prime .... in bbls. 2 @ 2½c
Yellow Ochre, French $1.75
" " " in oil ... asst'd cans, 11c; kegs, 8c
" " Vermont .... in casks, 1½c
Yellow Chrome .... 17 @ 27c
" " in oil .... 14 @ 18 @ 24c
Zinc White American No. 1, dry .... 5 @ 5½
" " No. 1, in oil 9c
" French (Paris) .... 8 @ 10c
" " in oil .... @

Oils.

Linseed, Raw, in casks and bbls .... gal. 57 @ 58c
" Boiled " 60c
Bleached Whale .... ₩ gal. 65c
" Sperm .... ₩ gal. $1.12
" Elephant 65c
Signal 70c
Prime Lard 82c
No. 1 .... 68c
West Virginia .... 13 @ 18
Drilling 28c
Empire Cylinder ....
Miners' Oil .... 35 to 45c
Fish Oil, pressed .... 40 @ 43c
Neatsfoot 75c
Tallow 60c
Machinery 27c
Engine 50c

Sundries.

Asphaltum 9
Benzine .... ₩ gal 12c
Chalk .... ¾c
" Block .... ¾c
Dryer, Patent, Am'n .... ass't cans, 9c; keg, 7c
Frostings 40c
Glue, White .... 24 @ 35c
" Sheet 20c
Glaziers' Points, Zinc 8c
Gum, Copal 36c
" Damar 24c
" Shellac, English 36c
" " dark 42c
Litharge, English 7½c
Pumice Stone, selected Lumps .... 4 @ 6c
" powdered 2½c
Putty, in bladders .... 3 c
" in bulk 2½c
Spirits Turpentine 48c
Whiting Spanish .... ¾c
Waste, No. 1 Cop 10c
" No. 1 White Machine 10c
" No. 2 " 9½c
" No. 1 Colored 7c
" No. 2 " 6½c
" Washed Machine 9c

Glass.

FRENCH WINDOW GLASS.

Prices current per box of 50 feet.

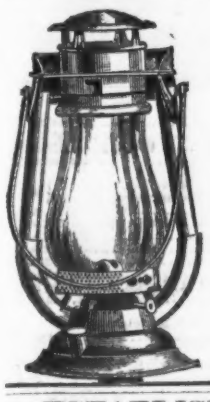
Single Thick.—Discount 50 & 10 %

SIZES.	1st.	2d.	3d.	4th.
6 x 8 to 10 x 15	$6.50	$5.75	$5.50	$5.25
11 x 14 to 16 x 24	7.25	6.75	6.25	6.00
18 x 22 to 20 x 30	9.25	8.50	7.75	7.25
15 x 36 to 24 x 30	10.25	9.25	8.25	
26 x 28 to 24 x 36	11.00	10.00	9.00	
26 x 36 to 26 x 44	11.75	10.75	9.50	
26 x 46 to 30 x 50	13.25	12.50	10.50	
30 x 52 to 30 x 54	14.00	13.00	11.25	
30 x 56 to 34 x 56	15.00	13.75	12.50	
34 x 58 to 34 x 60	15.50	15.00	13.25	
36 x 60 to 40 x 60	17.50	16.00	15.00	

Double Thick.—Discount 50 & 10 %.

SIZES.	1st.	2d.	3d.	4th.
6 x 8 to 10 x 15	$8.25	$7.75	$7.50	$7.00
11 x 14 to 16 x 24	10.00	9.25	8.75	8.25
18 x 22 to 20 x 30	12.75	11.75	10.75	
15 x 36 to 24 x 30	14.25	13.00	11.75	
26 x 28 to 24 x 36	15.25	13.75	12.50	
26 x 36 to 26 x 44	16.25	14.75	13.00	
26 x 46 to 30 x 50	17.50	16.75	14.25	
30 x 52 to 30 x 54	18.50	17.25	14.75	
30 x 56 to 34 x 56	19.50	18.25	16.25	
34 x 58 to 34 x 60	20.50	19.50	18.00	
36 x 60 to 40 x 60	23.00	21.00	20.00	

An additional 10 per cent. will be charged for all Glass more than 40 inches wide. Any size over 52 inches in length, and not making more than 81 unites inches will be charged in the 84 united inches bracket.

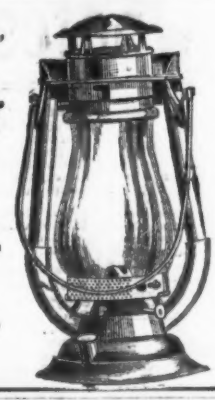


MILLER'S
NO. 13
LANTERN

Gives more light and will hold the flame more perfectly than any other Lantern made.

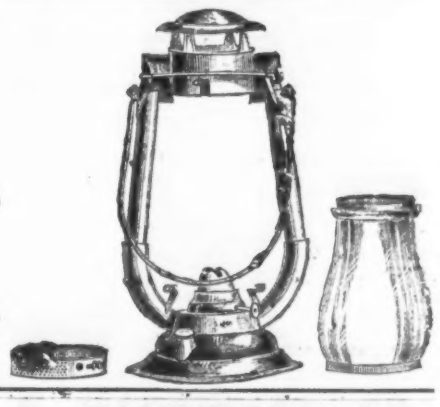
For Prices and Samples, address

Edw'd Miller & Co.,
Meriden, Conn.,
OR
35 Warren St.,
New York.



Manufacturers of

Lanterns,
Brass Kettles,
Machine Oilers,
Kerosene Goods,
Tinners' Trimmings,
&c., &c.



ESTABLISHED 1830.

FAIRBANKS
STANDARD SCALES.

Absolute Accuracy, Unvarying Accuracy, Sensitive Action, Durability, are the necessity of a perfect Weighing Machine. All these requisites are to be found only in

FAIRBANKS STANDARD SCALES.

They are made in every variety, adapted to all uses, and

With Every Improvement

which the skill and experience of a half century in the business can suggest.
Manufactured only by

E. & T. FAIRBANKS & CO.,
St. Johnsbury, Vt.
FAIRBANKS & CO.,
311 Broadway, N. Y.

RIEHLÉ BROS.
STANDARD
SCALES
AND
TESTING MACHINES

Of all varieties. Send for Price List.

Office and Works, 9th above Master; Store, 51 and 52 S. 4th street, Philadelphia. **New York, 91 Liberty Street.** Pittsburgh, Liberty street, under 7th Avenue Hotel. Chicago Office, 167 Washington street, room 34. GEO. V. HALLIDAY & CO., Agents, 610 N. 4th street, St. Louis, Mo., and New Orleans, La.

TINIUS OLSEN & CO.,
STANDARD SCALES
AND
TESTING MACHINES.

Manufacturers of Olsen's Little Giant Testing Machine, and Improved Railroad, Wagon and Furnace Charging Scales.
Office and Works, N. W. cor. 19th and Buttonwood Sts., Philadelphia.

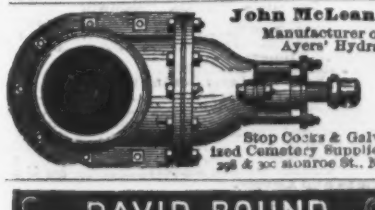
BUFFALO SCALE CO.,
BUFFALO, N. Y.,
Manufacturers of
R. R. Track Scales, Hay Scales, Coal Scales, Grain Scales, Platform Scales, Counter Scales, &c.
Send for price list, stating what you want.

AGENTS IN ALL FOREIGN COUNTRIES.

HOWSONS PATENT OFFICES

119 South Fourth Street,
PHILADELPHIA
Branch Office, 605 Seventh St. Washington, D.C.
H. HOWSON, Engineer and Solicitor of Patents.
C. HOWSON, Attorney at Law and Counsel in Patent Cases.
SEND FOR CIRCULARS.

THE BELMONTYLE OIL
PREVENTS RUST, TARNISH, &c.,
on Fire Arms, Machinery, Tools, Cutlery, Safes, Saws, Skates, Stoves, Hardware, &c., without injury to the polish. In use over 10 years. Highest testimonials. Samples, 50 cents; three for $1.00 sent free of expressage. Send for Circular.
BELMONTYLE OIL CO., Sole Manufacturers,
150 Front St., New York.



John McLean,
Manufacturer of
Ayers' Hydrants
Stop Cocks & Galvanized Cemetery Supplies.
298 & 300 Monroe St., N. Y.

DAVID ROUND
HAND MADE COIL
CABLE & BLOCK
CHAINS.
CLEVELAND, O.
SEND FOR PRICES.

Metal Workers' Crayons.

More convenient and cheaper than either common or French chalk. For manufacturers of all sheet metals, metal workers, machinists, blacksmiths, &c. Send for sample and price list.

D. M. STEWARD,
Sole Manufacturer,
231 State Avenue, Cincinnati, Ohio.

BROWNING, SISUM & CO., 85 Chambers St.,
Manufacture
Belt Hooks, Cutters, Spring Keys, D Rings, Staples, and everything pertaining to wire bending.
Factory, BROOKLYN.

AKRON IRON COMPANY,
AKRON, OHIO,

Sole Manufacturers of

Patent Hot Polished Shafting.

Medal of Superiority awarded at American Institute Fair of 1880.

This Shafting is superior to any in the market, and commends itself to the trade for the following reasons, viz:

1st. It is perfectly straight and round.
2d. It can be finished accurately to any desired gauge.
3d. It will not rust or tarnish easily.
4th. It will not warp or spring in key seating.
5th. Its surface is composed of magnetic oxide of iron, and consequently presents a journal or bearing surface that is unexcelled.
6th. The peculiarity of its manufacture is such as to entail loss in making it, if other than superior stock is used. Those purchasing it may therefore be assured of receiving first-class material.

Price lists, catalogues and references furnished on application.

Where parties desire it we cut keyways or splices any length required, at a moderate charge.

AKRON IRON CO., Akron, Ohio.

AGENTS:
E. P. BULLARD, 14 Dey Street, N. Y.
S. E. BLISS, 89 Lake Street, Chicago, Ill.
D. N. BROWN MACHINERY CO., St. Louis, Mo.
J. H. KERRICK & CO., Indianapolis, Ind.
JOSHUA HENDY, San Francisco, Cal.

EXCELSIOR LAWN MOWER

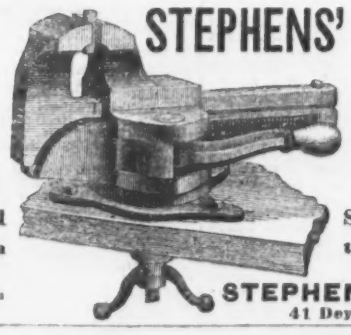
We make *Seven Sizes* of *Roller Mowers* and *Six Sizes* of *Side-Wheel Mowers.* We claim for our Mowers

Perfect Work, Light Draft and Simplicity.

We have received many first premiums in competitive trials with other Mowers, both in this country and a road. We have special patterns of Mowers for export, meeting the requirements of every market. Our new Horse Mower is conceded to be the *Lightest* and *Best* Horse Lawn Mower ever made. N. B.—Horse and Hand Lawn Mowers are alike guaranteed in all respects. Send for Illustrated Catalogue. Address

CHADBORN & COLDWELL MFG. CO.,
Newburgh, N. Y.

STEPHENS'
PAT. VISE.



Stationary and Swivel Bottoms.
The Best in the Market.
For Sale by the Trade.

STEPHENS PAT. VISE CO.
41 Dey Street, New York.

THORNE, DeHAVEN & CO., Drilling Machines,
21st Street, above Market, Philadelphia.
PORTABLE DRILLS. Driven by power in any direction.
RADIAL DRILLS. Self-feed—Large Adjustable Box Table.
VERTICAL DRILLS. Self-feeding.
MULTIPLE DRILLS. 2 to 20 Spindles.
HORIZONTAL BORING AND DRILLING MACHINES.
HAND DRILLS. CAR BOX DRILLS.
SPECIAL DRILLS. For Special Work.

TRENTON LOCK & HARDWARE CO.,
TRENTON, N. J.
MANUFACTURERS OF
DOOR LOCKS AND HARDWARE,

BRONZED IRON AND BRONZE METAL DOOR TRIMMINGS, BUTTS AND HARDWARE.

CAST BUTTS,
DOOR BOLTS,
WELL WHEELS,
FLUSH BOLTS,
SHUTTER BOLTS,
PAD LOCKS,
BARN DOOR HANGERS, & RAIL,
GRINDSTONE FIXTURES,
SCREW & SIDE PULLEYS,
NOISELESS PULLEYS,
HAY FORK PULLEYS,
SHELF BRACKETS,

PHILADELPHIA SLIDING DOOR HANGERS AND RAIL.

Having largely increased our facilities and line of goods, we invite the attention of the Trade.

Illustated Catalogues Furnished on Application.

Agencies. { James M. Vance & Co., No. 211 Market St., Philadelphia.
James Marshall, No. 48 Warren St., New York.

Providence Tool Co.,
PROVIDENCE, R. I.

TACKLE BLOCKS.—Galvanized Malleable Iron.

With Becket and Wrought Iron Hook. | With Wrought Iron Hook. | With Double Becket. | With Single Becket.

Prices on Application.

HENRY B. NEWHALL,
105 Chambers Street, - - New York Agent.

Office of **NELSON LYON,**
SOLE MANUFACTURER OF
Lyon's Patent Metallic Heel Stiffeners,
Also, Manufacturer of
BRUSHES
Of Every Description,
Nos. 17 & 19 Green St.,
Albany, N. Y., Dec. 8, 1880.

To All Whom it May Concern:

To-day a decree in my suit against G. T. Fisher & Co., of Detroit, for an infringement of my patent, was made and entered, of which the following is an extract:

At a session of the Circuit Court of the United States for the Eastern District of Michigan, held at Detroit, &c., on Wednesday, the 8th day of December, 1880. Present, Hon. H. B. BROWN, District Judge.

NELSON LYON
against
GUYON T. FISHER, *et al.*

It is ordered, adjudged and decreed, that the act entitled "An act for the relief of Nelson Lyon and Jeremiah S. James," passed by Congress and approved April 1, 1880, &c., is a good, valid and constitutional act.

That the original patent, bearing date July 9, 1872, and numbered 128,843, granted and issued to Joseph Barsaloux, Jeremiah S. James and Nelson Lyon, when corrected by the Acting Commissioner of Patents, as directed by said act, was a good and valid patent.

That the said Joseph Barsaloux was the original and first inventor of the improvements in metallic stiffeners for boot and shoe heels mentioned and described in said letters patent.

That the Reissued Letters Patent No. 9198 dated May 11, 1880, granted to said Nelson Lyon for an improvement in metallic heel stiffeners for boots and shoes, originally patented as aforesaid, is a good and valid patent; that said Lyon is exclusively possessed of said Letters Patent and the invention thereby secured.

That the defendants, G. T. Fisher & Co., and each of them, have infringed upon the said patents and upon the exclusive rights of said Lyon under the same.

That said Lyon receive of said defendants all the profits, &c., they have made, and in addition thereto all the damage he has suffered by reason of the infringements by the defendants, and also the costs, charges and disbursements in the action.

It is also further ordered, adjudged and decreed, that a perpetual injunction be issued against said defendants, according to the prayer of the said complainant's bill.

You are also hereby notified that the perpetual injunction has been issued and served on the defendants.

All questions as to damages and settlements in relation to infringements under my patents must be addressed to and made with my attorney, WILLIAM H. KING, in my care at the above address.

NELSON LYON.

New York Wholesale Prices, April 6, 1881.

HARDWARE.

Anvils.
Eagle Anvils American ....₩ ℔ 10c dis 20 %
Wright's..............................10½c @ 11c
Armitage's Mouse Hole.....................9½ @ 9¾c
Trenton..................................10½c
Wilkinson's..............................10 c
Anvil, Vise and Drill.
Millers Falls Co., $18.00..................dis 20 %
Augers and Bits.
Conn. Valley Mfg. Co. }
Douglass Mfg. Co. }
Humphreysville Mfg. Co. }
Ives }
Beecher (French, Swift & Co) } dis 40 % from list of Jan 7, 1880
Griswold }
Nobles Mfg. Co. }
Kesson's Patent }
Cook's, Douglass Mfg. Co..................dis 40&10 %
Snell Mfg. Co.'s C. S. Augers..............dis 40 %
" " B. Machine....................dis 40 %
" " C. S Bits......................dis 40 %
" " Jenning's Bits..................dis 35 %
Patent Solid Head..........................dis 20 %
Lewis' Patent Single Twist.................dis 33⅓ %
Russell Jennings' Auger, Dowel, Machine-Dowel and Hand-Rail Bits..........dis 10&10&10 %
Russell Jennings' Augers..........dis 16⅔&10&10&10 %
Russell Jennings' Car and Machine Bits, Boring-Machine and Millwrights' Augers dis 25&10&10&10 %
Imitation Jenning's Bits...................dis 40@45 %
Ives' "Jennings" Bits......................dis 33⅓&10 %
Andrews Bits...............................dis 40 %
Expansive Bits, Clark's, small, $18; l'ge. $26.....dis 25 %
" " Ives..........$20 @ $30—dis 33⅓ %
" " Blake's..................$20—dis 40 %
" " Parmelee's......$20 and $30 .dis 33⅓ %
Hollow Augers Ives' } dis 20 %
French, Swift & Co }
" " Douglas.....................dis 20 %
" " Bonney's Adjust......₩ doz $48—dis 25&10 %
Stearns' Adjust.. ₩ doz $48—dis 20&10 %
" Ives' Expansive....each $4.50—dis 30 %
" Univ'sal Expansive, each $4.50—dis 20 %
Woods.......................................dis 25 %
Gimlet Bits......................$7.50 ₩ gross, dis 45 %
" Diamond..........₩ doz $1.10 dis 20&10 %
" "Bee"..............................dis 35&5 %
Double Cut Gimlet Bits, Shepardson's ....dis 40 %
" " Ct. Valley Mfg. Co...dis 30&10 %
" " Hartwell's.............dis 60&10 %
" " Douglass'..............dis 40 %
" " Ives'....................dis 50 %
Morse's Bit Stock Drill......................dis 25 %
L'Hommedieu's Ship Augers....................dis 15 %
Watrous Ship Augers..........................dis 15 %
" Extension Lip..............................dis 30 %

Awl Hafts.
Sewing Brass Ferrule.........$3.50 ₩ gross—dis 40&10 %
" " .... 3.50 " dis 40&10 %
Patent Sewing, Short............$1.00 ₩ doz—dis 40&10 %
" " Long................$1.40 ₩ doz—dis 10 %
Patent Peg Plain Top........$10.00 ₩ gross—dis 40&10 %
" " Leather Top ..... 12.00 " dis 40&10 %
Awls, Brad Sets, &c.
Awls, Sewing, Common.......₩ gross $1.70—dis 25&10 %
" Shouldered Peg.........₩ gross 2.45—dis 25&10 %
Patent Peg ....₩ gross .63—dis 25&10 %
Shouldered Brad.........₩ gross $2.70—dis 25&10 %
" Handled Brad ....$7.00 ₩ gross—dis 20&10 %
" Handled Scratch.......$7.00 ₩ gross—dis 20&10 %
" Socket Scratch.........$1.00@$1.25 ₩ doz—net
Brad Sets, Aiken's..............₩ doz $17.00—dis 45&10 %
" No. 42, $10.50; No. 43, $12.50.............dis 70 %
" Stanley's Excelsior, No. 1, $9.60...dis 30&10 %
" " No. 2, 4.80...dis 30&10 %
" " No. 3, 7.80...dis 30&10 %

Axes.
Single Bit, 4½ to 5½ and under..........₩ doz $9.50 net
" 4½ to 6 and over..........₩ doz $10.00 net
" Beveled..............50 c ₩ doz advance
Double Bit, 4½ to 5½ and under.........₩ doz $18.00 net
" 4½ to 6 and over..........₩ doz $19.00 net
" Beveled..............$1.00 ₩ doz advance
Axle Grease.—Frazer's....................₩ ℔ 6c
Bag Holders.
Sprengle's Patent, per doz. $18.................dis 40 %
Balances.
All Spring Balances..........................dis 15&10 %
Bells.
Hand, Light Brass...........................dis. 60&10 %
" Extra Heavy................................dis 45 %
" White Metal................................dis 60 %
" Silver Chime...............................dis 20&10 %
" Globe (Cone's Patent)......................dis 25&10 %
Gong, Abbe's.................................dis 20&10 %
" Yankee.....................................dis 30&10 %
" Barton's...................................dis 30&10 %
Crank Taylor's...............................dis 25&10 %
" Brook's...................................dis 50&10&2 %
" Cone's.....................................dis 10 %
" Connel's...................................dis 35 %
Lever, Sargent's.............................dis 60&10 %
" Taylor's Bronze or Plated Lever...............net
" Japanned Lever.........................dis 25&10 %
" R. & E. M. Co.'s........................dis 50&10&2 %
Pull, Brook's.................................dis 50&10&2 %
" Western.....................................dis 25&10 %
Call...dis 25 %
Cow, Common Wrought........................dis 55 & 10 %
" Western.....................................dis 20&10 %
" " Sargent's new list....................dis 55&10 %
Kentucky "Star"..............................dis 20&10 %
" Sargent's new list.......................dis 55&10 %
Dodge's Genuine Kentucky, new list—
Nos. 0 1 1½ 2 3 4 5 6 Hog } dis 50 %
$12.00 10.00 9.00 8.00 6.00 5.00 3.50 2.50 5.00 }
Texas...dis 50&10
Bellows.
Blacksmiths', Common..........................dis 45 %
" Extra and Pittsburgh Pattern....dis 20 %
Moulders'.....................................dis 25 %
Hand Bellows.......................List of Dec. 1, 1870, net
Belting, Rubber.
N Y Belting and Packing Co.................dis. 20@50 %
Bit Holders.
Extension, Barber's.........₩ doz $15.00—dis 40&5 %
" Ives'....................₩ doz $15.00—dis 40&5 %
Diagonal.....................₩ doz $21.00—dis 40 %
Angular......................₩ doz $24.00—dis 40 %
Blind Adjusters.—Domestic....₩ doz $3.00, dis 15 %
Blind Fasteners.
Mackrell's..........per doz. pairs, $1.00. dis 10 %
Van Sand's..........No. 2000, per gross. $10.00...dis 10 %
" old pattern.................₩ gross. $9.00 net
Washburn's Patent.....................₩ gross $10.50 net
Merriman's..............................new list net
Mackrell's...................₩ doz. pairs, $0.65, dis. 10 %
Blind Staples.
Barbed, ⅜ in. and larger.....................₩ ℔ 11c net
" ⅝ in...₩ ℔ 13c net
Blocks.
Differential Pulley Blocks....................dis 20 %
Penfield Block Works, Rope and Iron Strap'd...dis 40 %
" " " Wrot. Iron Com. bushed.dis 25 %
" " " " all steel roll'r.dis 10 %
" " " Sheaves " " dis 35 %
Stanley R. & L. Co., Rope and Iron Strap'd...dis 40&10 %
Bolts.
Cast Iron Barrel, Shutter, &c..................dis 55&10 %
Cast Iron Chain (Sargent's list)..............dis 70&10 %
Bush's Lever and Chain Bolts.................dis 40 %
Ives' Pat. Door Bolts..........................dis 50 %
Wrought Barrel................................dis 60&10 %
" Square.....................................dis 60&10 %
" Shutter, all iron, Stanley's list....dis 50&10 %
" " Brass Knob. " "....dis 20&10 %
" " Sargent's list..........dis 60&10 %
" Sunk Flush, Sargent's................dis 75&10 %
" " Stanley's.....................dis 40&7½ %
" B. K. Flush, Com'n, Stanley's..........dis 50&5 %
" " " Ex. Heavy..................dis 40&10 %
" Plated Knob & Slide Flush "...dis 50&2½ %
Carriage and Tire, Common.....................dis 75&10 %
" " Philadelphia, new list.......dis 55 %
" " Philada. Pattern..............dis 70 %
" " Shelton's........(old list) dis 60&10 %
R. B. & W. Carriage (old list)...............dis 65 %
Tire, Am. Screw Co.'s, Phila, new list, Nov 1, '79.
...................................dis 70&10 %
" "Bay State"..................................dis 80&5 %
" R. B. & W., new list...........................dis
Stove—American Screw Co.'s....................dis 40 %
" R. B. & W......................................dis 40 %
Plow...dis 45 %
" R. B. & W.......................................dis 40 %
Machine..dis 60&10 %
Bolt Ends......................................dis 60&10 %
Borax..............................17c ₩ ℔ net
Boring Machines. Upright. Angular.
First quality, no Augers.... $5.50 $6.75....dis 40 %
Phillips' with Augers........ 6.50 7.00 net
Boxes.
Interchangeable Shelf Boxes.....................dis 20 %
Braces.
G. S. Backus.....................................dis 50 %
Wilson Mfg. Co...................................dis 10 %
Barber's...dis 40 %
Spofford's Patent...............................dis 50&5 %
Noble's Patent...................................dis 40&5 %
Ives' Patent Braces.............................dis 50&10 %
Common Ball (American).........................dis 50&5 %
Amidon's...dis 50 %
Barker's Impd....................................dis 40 %
Empire...dis 30 %
Buffalo Ball.....................................dis 40 %
Brackets.—Shelf (Sargent's)...............dis 60&10 %
Reading..dis 60&10 %
Bright Wire Goods list of Dec. 15, 1879. dis 60&10 %
Bull Rings.—Union Nut Co......................dis 60&20
Sargent's...................................dis 66⅔&10 %
Hotchkiss'...........................low list dis 35 %
Humason, Beckley & Co.'s.......................dis 60&10 %

Butts.
Wrought Brass..............................dis 45&10 %
Brass, Tiebout's..............................dis 30 %
" Corbin's.................................dis 40&10 %
Fast Joint, Narrow.........................dis 45&10 %
" Broad..................................dis 45&10 %
Loose Joint..................................dis 55&10 %
" Japanned...............................dis 55&10 %
" with Acorns............................dis 45&10 %
" Japanned, with acorns..................dis 55&10 %
Parliament Butts.............................dis 60&10 %
Meyer's Hinges...............................dis 60&10 %
Loose Pin, no Acorn..........................dis 50&10 %
" Acorns................................dis 55&10 %
" " Japanned........................dis 60&10 %
" " " Plated Tips..dis 60&10 %

WROUGHT IRON.

Fast Joint Narrow............................dis 50&10 %
" Lt. Narrow...............................dis 50&10 %
" Broad....................................dis 50&10 %
Loose Joint, Broad...........................dis 55&10 %
Table Butts, Back Flaps, &c..................dis 50&10 %
Inside Blind, Regular........................dis 50&10 %
" " Light...................................dis 50&10 %
Loose Pin, Wrt...............................dis 55&10 %
" " " Light.................................dis 50&10 %
Spring Hinges:
American Spiral Spring Butt Co., Jap'd.......dis 25 %
" " " " Fancy......dis 20 %
Gem Spiral Spring Butts, Japanned...........dis 25 %
" " " " Ornamental.....dis 20 %
Geer's Spring and Blank Butts................dis 25 %
Sabin Mfg. Co.'s Double Acting...............dis 35 %
Union Spiral Spring, Japanned................dis 25 %
" " Ornamental........................dis 20 %
Union Spring Hinge Co.'s.....................dis 25 %
American Spring Hinge Co.'s..................dis 25 %
Union Mfg. Co................................dis 25 %
Bommer's.....................................dis 25 %
Blind Butts, Parker..........................dis 75 %
" Palmer...................................dis 45&10 %
" Seymour..................................dis 60&10 %
" Shepard's "Double Locking"
Nos. 1 & 2........................dis 60&10&10 %
Shepard's "Noiseless," Nos.
50 & 60..............................dis 6 &10&10 %
" Lull & Porter............................dis 66⅔&10 %
" Nicholson................................dis 40&10 %
" Huffer...................................dis 50 %
" Clark's, Nos. 1, 3, 5....................dis 75 %
" Sargent's No. 12..................dis 75&10&10 %
Bow Pins.
Hotchkiss'..................................low list net
Humason, Beckley & Co.'s.........................dis 60 %
Sargent & Co.'s.........$19.70 and $21.40, dis 60&10 %
Butchers' Cleavers.
Humason & Beckley Mfg. Co.......................dis 20 %
Bradley's..dis 25 %
Beatty's...dis 25&5 %

1	2	3	4	5	6	7	8
$16.50	19.00	21.50	24.00	27.00	30.00	33.50	36.50

Can Openers.
Messenger's Comet....................₩ doz $8.00, dis 25 %
American...........................₩ gross $7.50, dis 10 %
Duplex.............................₩ doz 25c, dis 15@20 %
Lyman's...............................₩ doz $3.75, dis 20 %
No 4, French..........................₩ doz $2.25, dis 55 %
No. 5, Iron handle..................₩ gross $7.50 dis 10 %
Eureka................................₩ doz $2.50, dis 10 %
Sardine Scissors......................₩ doz $7.00, dis 55 %
Star..................................₩ doz $5.00, dis 20&25 %
Sprague......................................dis 60&10 %
"Worlds Best" per gross, No. 1, $12; No. 2, $24; No. 3, $36.....................................dis 50 %
Caps—Percussion, ₩ 1000.
U. M. C., F. C. trimmed..........50c } dis
" F. L. ground...............70c } 10&5 %
U. M. C. Cen. fire ground........70c } dis
" Double W. proof,..........$1.40 } 10&5 %
G. D. & S. B.........................96c, dis 7½ %
Double Waterproof, in 1 10's..........$1.40 } dis
Colt's Pistol, " ....70c } 10&5 %
F. L...50c } dis 10%
E. B. 1-10, Trimmed...........................65c } 5 %
E. B. 1-10 Ground Edge.........................70c }
Musket, in 1-10's.............................75c net
Cartridges.—Rim.....................dis 60&10&10 %
Central Fire...................................dis 20 %
Cards.—Horse and Curry.......................dis 10 %
Cotton...dis 10 %
Wool...dis 10 %
Carpet Stretchers.
Cast Steel, Polished..............₩ doz $5.00, dis 30 %
" Iron Steel Points...............₩ doz $2.00, dis 45 %
Bullard's......................................dis 25 %
Casters.
Bed..........................new list July, '80, dis 35&10 %
Plate and Shallow Socket " " dis 35&10 %
Deep Socket........................ " " dis 25&10 %
Cattle Leaders.
Humason, Beckley & Co.'s......................dis 65&10 %
Sargent's.....................................dis 66⅔&10 %
Chain.
Trace, 6½-1-2....................₩ pair 79c }
" 6½-10-3........................₩ pair 70c } dis 40 %
" 7-10-2...........................₩ pair 86c }
German Halter Chain, New list Oct. 22, '79.......dis 40 %
" Coil, New list Oct. 22, '79..........dis 50 %
Covert Halter, Hitching and Breast..............dis 35 %
Oneida Halter Chain (old list)...................dis 40 %
Galvanized Pump Chain.........................₩ ℔ 10c net
Jack Chain, Iron.................................dis 50 %
" Brass......................................dis 40 %
Chalk.
White............................₩ gross 60c net
Red..............................₩ gross 80c net
Blue.............................₩ gross 100c net
White Crayons....................₩ gross 190 net
Chisels.
Socket Framing, Crossman.....................dis 65&5 %
" " Arlington Edge Tool Co...dis 65&10 %
" " Buck Bros.......new list, dis 22½ %
" " Merrill...........................dis 65&10 %
" " Witherby Tool Co..............dis 65&10 %
" " Douglass'.........................dis 65&10 %
" Firmers, Crossman.......................dis 65&5 %
" " Arlington Edge Tool Co...dis 65&10 %
" " Buck Bros.........new list, dis 22½ %
" " Merrill...........................dis 65&10 %
" " Witherby Tool Co...............dis 65&10 %
" " Douglass'.........................dis 65&10 %
" Corner......................................dis 65&10 %
Tanged Firmers extra....................dis 33⅓ @ 40 %
" Butcher's..............$5.00 @ 5.25 to £
" Spear & Jackson's...................5.00 to £
" Buck Bros. (Shank)...................5.25 to £
Clamps.
Iron, Providence Tool Co.'s, Wrt. Iron..........dis 25 %
" Adjustable, Gray's...........................dis 20 %
" " Lambert's.................................dis 20 %
" " Snow's..................................dis 40&5 %
" " Hammer's.................................dis 15 %
" " Stearns'.................................dis 15&10 %
" Cabinet, Sargent's............................dis 70&10 %
" Carriage Makers', Sargent's................dis 65&10 %
" Cord and Tape (T. & S. Mfg. Co.)............dis 30 %
Clips, Axle.
Norway or Best.................................dis 40&10 %
Superior.......................................dis 45&10 %
Coal Hods.
Griffiths.....................................dis 33⅓ %
Cockeyes...................................dis 35&10 %
Cocks, Brass.
Racking .... new list, July 10, '80 }
Globe.................. " " }
Plain Bibbs............ " " } ....dis 40 %
Ale and Beer........... " " }
Coffee Mills.
Board and Box.................................dis 35&10 %
Selsor's Pat.......................$9.50, $10.50, dis 25 %
American (Enterprise Mfg. Co.)....................dis 25 %
French Steel......................................dis 25 %
Combined Dinner Pail and Lantern.
Per doz $15.00...................................dis 30 %
Compasses, Dividers, &c.
Compasses...dis 55 %
Calipers..dis 55 %
Dividers..dis 55 %
Bemis & Call Co.'s Dividers...................dis 60&5 %
" " Compasses & Callipers....dis 50&5 %
" " Wing & Inside or Outside.dis 60&5 %
" " Double......................dis 60 %
" " Call's Pat. Inside ....dis 30 %
Cook's..dis 25 %
Excelsior...dis 60 %
Miller's Patent...................................dis 25 %
Coopers' Tools.
Bradley's....................................dis 15 @ 20 %
Corkscrews.—Humason & B.....................dis 33⅓ %
Clough's Wire....................................dis 25 %
Corn Knives and Cutters.—Bradley's..dis 10 %
Wadsworth's......................................dis 33⅓ %
Crow Bars.
Cast Steel......................................₩ ℔ 8½c
Iron, Steel Points..............................₩ ℔ 6½c
Curling Irons, &c.
⅛, ⅜, ⅝ in., $1.80 2.00, 2.40....................dis 10 %
Curling Tongs..................₩ doz $3.65, dis 10 %
Pinching Irons.................₩ doz 7.50, dis 20 %
Curry Combs.
Fitch's new list............................dis 45 @ 50 %
Hotchkiss' Novelty..........new list, July, 1880, dis 25 %
" Exclr. Supr. Champion.................dis 25 %
Lawrence.......................new list, July 1880 dis 25 %
Lawrence, with detachable Mane Comb new list July 1880, dis 25 %
Rubber.............................₩ doz $10.00, dis 15 %
Curtain Pins.—Silvered Glass......................net
White Enamel..net

Cutlery.
Meriden Cutlery Co. (Table)..............................net
Am. Miller Bro.'s Cutlery Co......................dis 25 %
Humason & Beckley, Pocket.......................dis 33⅓ %
The Wm. Rogers Mfg. Co....................................net
Naugatuck Cutlery Co...............................list net
Aaron Burkinshaw's Pocket.........................dis 25 %
Dog Collars.
Embossed Gilt...................................dis 30 %
Leather...dis 30 %
Brass...dis 25 %
Door Springs.
Torrey's Rod..................₩ doz $2.10, dis 10 %
Gray's " ....₩ doz $1.70. net
Bee Rod...............................₩ doz $1.70. net
Warner's......................................dis 15&10 %
Gem (Coil)—
No. 1, Large, Japanned............₩ doz $3.50 } dis
No. 2, Medium, " ....₩ doz 2.50 } 25&10 %
No. 3, Small. " ....₩ doz 2.00 }
Challenge (Coil)— Nos. 9 7 6
Japanned..........₩ doz $2.00 2.50 3.50 }
Coppered..........₩ doz 4.00 4.50 5.00 } dis 10 %
Galvanized........₩ doz 3.50 4.00 4.50 }
Nickeled..........₩ doz 5.50 6.00 7.00 }
Star (Coil)—For Cop'd, Nickel-Plated, &c. see list.
No. 4, ("Shoo Fly") screen door size ₩ doz $1.80 }
No. 5, Screen Door Size.........₩ doz $2.00 } dis
No. 6, Medium.....................₩ doz 2.50 } 30&10 %
No. 7, Large......................₩ doz 3.50 }
Sabin's Lever..No. 1, $1; 2, $1.50; 3, $2; 4, $2.50; dis 30 %
Sabin's Boss ...No. 1, $5.40; 2, $4.20; 3, $3.00.dis 50 %
Sabin's Crown...............................₩ doz $2.75, dis 50 %
Philadelphia................5 in., $5.00; 8 in., $7.00, dis 35 %
Barker's Concealed...............................dis 20 %
Cowell's.......No. 1, $18.00; No. 2, $15.00 ₩ doz, dis 50 %
Rubber, complete.........................₩ doz $1.80, dis 10 %
Hercules...dis 40 %
Drawing Knives.
Arlington Edge Tool Co........................dis 65&10 %
Crossman's No. 1...............................dis 65&5 %
Merrill.......................................dis 65&10 %
Nobles Mfg. Co...................................dis 15 %
Bradley's..dis 35 %
Adjustable Handle................................dis 20 %
Witherby Tool Co..............................dis 65&10 %
Douglass......................................dis 65&10 %
Drills and Drill Stocks.
Blacksmiths'.................................each $2.70 net
Blacksmiths Self Feeding.................each $7.50, dis 20 %
Breast P. S & W...................................dis 20&10 %
" Hotchkiss.......................................dis 20 %
Breast, Wilson's..................................dis 20 %
" Miller's Falls.........................each $3.00. dis 25 %
" Bartholomew's..................each, $2.50 dis 25&10 %
Ratchet, Merrill's.................................dis 10 %
" Ingersoll's.....................................dis 25 %
" Whitney's.......................................dis 20 %
" Weston's..dis 20 %
" Moore's Triple Action.....................dis 20 @ 25 %
Whitney's Hand Drill...............................dis 50 %
Wilson's Drill Stocks..............................dis 10 %
Automatic Boring Tools..................each $2.25, dis 20 %
Drill Chucks.—Morse's Beach Patent...... dis 30 %
" Adjust..each $10.00, dis 30 %
Danbury...................................$8.00, dis 30 %
Egg Beaters.
Dover...₩ doz. $2.50 net
Acme..................................$20 per gross, dis 33⅓ ₩ 10 %
Standard ....$24 per gross, dis 33⅓ %
National...................................₩ doz $4.50, dis 33⅓ %
Family................per gross $15; per doz., $1.50 net
Elevator Buckets.
Mill E. Buckets, light, 3½ to 10 in. (Duc's Improved)
₩ 100 $15.00 @ $54.00, dis. 10 %
Mill E. Buckets, heavy, 5 to 10 inches (Duc's Improved)
₩ doz $5.60 @ $10.20 dis. 10 %
Storehouse, Duc's Pat.) 12 to 17, $12.00 @ $20.00.dis. 10 %
Emery and Emery Paper.
Genuine Chester—Regular Nos...........................₩ ℔
" " Flour and FF..................................₩ ℔
" " in 10-lb. cans. ....2c extra
Washington Mills—Regular Nos.........................₩ ℔ 6c
" Flour...₩ ℔ 5c
Excelsior Mills, Regular Nos., Grain in kegs.....₩ ℔ 6c
" " " Flour and FF " .....₩ ℔ 4c
" " " 10-lb. cans.........₩ ℔ 9c
Wellington Mills, Grain..............................₩ ℔ 10c net
" " Flour..............................₩ ℔ 8c net
Hampden Emery Grain......................................5c net
" " Flour...3c net
B. & A. Emery Paper.......................................dis 20@25 %
Sibley's Emery and Crocus Cloth.............................
Large size, $16; Medium, $10.50 per ream; dis 15 %
Enameled and Tinned Ware.
Kettles...45 %
Sauce Pans..dis 30 %
Tinned Sauce Pans.......................................dis 30 %
Escutcheon Pins.
Iron..dis 20 %
Brass...dis 45 %
Escutcheons.
Door Lock.................Same discounts as Door Locks
Brass Thread..dis 55 %
Wood..dis 25 %
Faucets.
Fenn's..dis 40 %
Fenn's Cork Stops.......................................dis 33⅓ %
Star...dis 55&10 %
Frary's Patent Petroleum...............................dis 20&10 %
Wood and Metallic.......................................dis 40 %
West's Patent Key.......................................dis 45 %
Metallic Key, Leather Lined.............................dis 50 %
Cork Lined..dis 70 %
Enterprise (Self Measuring).........₩ doz, $36.00, dis 25 %
Felloe Plates.........................₩ ℔ 10c, dis 10 %
Files.
Auburn.....................................$5.00 to £. dis 35 %
E. M. Boynton's...............................new list, dis 25 %
J. & Riley Carr..4.50 to £
Johnson & Bro...dis 30 %
Butcher's...4.50 to £
Walter Spencer & Co.'s "Diamond"......................4.50 to £
Fisher's..4.75 to £
Moss & Gamble...4.50 to £
H. Disston & Sons (new list)............................dis 40 %
Heller Bros.' Horse Rasps...............................dis 20@25 %
Nicholson...dis 30&10 %
New American..dis 40 %
Union File Co...dis 40 %
Fluting Machines.
Knox, 4-inch Rolls..........................$3.25 each }
" 6 " " ....4.00 " } dis 20 %
" 8 " " ....6.50 " }
Peerless, 4-inch Rolls..............................4.00 each net
" 5 " " ....4.75 each net
Eagle, 3½-inch Roll.................................$2.15, dis 20 %
" 5½ " " ....$2.85, dis 20 %
Eureka, No. 1, 7-inch Roll..................6.00 each, dis 10 %
" No. 2 5-inch Roll.................4.00 each, dis 10 %
Crown..4½-in. $3.50; 6-in., $4.00; 8-in. , $6.50 each dis 20 %
Star.............. 4½ in., $4.00; 6 in., $5.00 each dis 10 %
Crown Jewel...........................6 in., $3.40 each. dis 20 %
American, 5 in., $3; 6 in., $3.40; 7 in., $4.50 each, dis 20 %
Domestic Fluter..1.50 each net
Geneva Hand Fluter, White Metal..₩ doz $12, dis 25 %
Crown Hand Fluter, Nos. 1, $15.00; 2, $12.50; 3, $10.00
₩ doz...dis 20 %
Shepard Hand Fluter..........No. 75 ₩ doz $15, dis 10 %
" " " No. 90, $9.00; No. 110, $7.25;
" " " No. 100, $6.00 ₩ doz..............net
Clark's Hand Fluter...............₩ doz $15.00, dis 33⅓ %
Combined Fluter and Sad Iron.......₩ doz 15.00, dis 30 %
Buffalo..................................₩ doz 10.00, dis 10 %
Fluting Scissors...........................dis 45 %
Fly Traps.
Paragon................................per doz, $3; net
Forks.
Hay, Manure and Spading.................................dis 50 %
Plated "A 1, Rogers & Bro.........................dis 40&5&5 %
" Reed & Barton....................................dis 4 &5&5 %
Fruit and Jelly Presses.
Enterprise Mfg. Co.......................................dis 25 %
American...dis 20 %
Fry Pans.
Burnished, list as follows................................dis 60 %

No.	0	1	2	3	4	5	6	7	8
₩ doz....	$3.00	$3.75	4.25	4.75	5.25	6.00	7.00	8.00	9.00

"Acme"...dis 45 %
Gauges.
Marking, Stanley's......................................dis 50&10 %
" Chapin's..dis 50&10 %
Wire..dis 10&10 %
" Disston's..dis 20 %
Gimlets.
Nail and Spike...dis 45 %
"Bee" Gimlets...........................₩ gross $12.00 dis 50&10 %
"Eureka Gimlets..dis 50 %
"Diamond Gimlets...dis 40 %
Double Cut, Shepardson's...................................dis 40 %
" " Hartwell's...dis 50 %
" " Ives'..dis 50 %
" " Douglass'..dis 40%
Glue Pots.
Tinned and Enameled.......................................dis 25 %
Family, Howe's "Eureka"...................................dis 40 %
" L. F. & C.'s "Handy ....dis 25 %
Grindstone Fixtures.
Sargent's Patent...dis 70&10&10 %
Reading Hardware Co., new list...........................dis 30&10 %
Gun Wads.
U. M. C. B. E. 11 up...........................$2.00 }
" " 9 & 10...2.30 }
" " 7 & 8...2.00 } dis 5&5 %
" P. E. 11 up..3.10 }
" " 9 & 11...4.00 }
" " 7 & ....4.90 }
Halters.
Covert's Pat. Rope.......................................dis 50 %
Horse and Cattle Ties, Covert's..........................dis 50 %

Hammers.
Maydole's...dis 15 %
Cheney's..dis 25 %
Hartford Hammer Co. (new list July 20, '80) ..dis 20 %
Humason & Beckley.......................................dis 50 %
Verree..dis 5 %
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 and 1.75.dis 25&10 %
Warner & Noble's..dis 10 %
Kip's...dis 20 %
Yerkes & Plumb..dis 15 %
Wilkinson's Smiths'...............................11½c ₩ ℔ net
Hand Cuffs and Leg Irons.
Providence Tool Co.'s Hand Cuffs, $15.00 ₩ doz } dis 10 %
" " Leg Irons, $25 ₩ doz.... }
Tower's...dis 25 %
Handles.—Door or Thumb Latches—

Nos.	0	1	2	3	4	
Per doz....	$0.80	1.00	1.18	1.35	1.50	.... dis 60&10 %

Roggin's Latches..........................per doz 35c@40c net
Bronzed Iron Drop Latches..₩ doz $0.75 @ 0.85 dis 10 %
Jap'd Store Door Handles—Nuts. $1.62; Plate $1.08
no Plate, $0.87..dis 10 %
Barn Door. ....per doz $1.40, dis 10 %
Wrought Chest...dis 65&10 %
Surface Chest...dis 55&5&10 %
Flush Chest...dis 60&10&10 %
Lifting...dis 60&10 %
Saw and Plane ....dis 40&10 %
Boynton's Pat. Loop Saw Handles...........................dis 25 %
" " Centennial Saw Handles..................dis 25 %
Hammer and Hatchet..dis 20 %
Brad Awl.............................₩ gross $3.00. dis 20&10 %
Hickory Firmer Chisel, assorted, ₩ gross $4.50 }
" " " large, " 5.00 }
Apple " " assorted, " 5.00 }
" " " large, " 6.00 }
Socket " " assorted, " 3.00 } dis
" Framing " assorted, " 5.00 } 20&10
File, assorted, ₩ gross...................................2.75 }
Auger, assorted, ₩ gross..................................6.00 }
" large, ...7.00 }
Patent Auger, Ives'.......................................dis 25
" Douglass'.................................₩ set $1.25, net
" Swan's.......................................₩ set $1, net
Hangers.
Barn Door, old patterns...................................dis 55&10 %
" New England..dis 65&10 %
Novelty...dis 40 %
Challenge...dis 50 %
Climax (Anti-Friction)....................................dis 50 %
Sterling Improved (Anti-Friction).........................dis 60&10 %
Cheritree...dis 50 %
Kidder's..dis 50&10 %
U. S..............................4 in., $12; 5 in., $15; dis 50 %
The "Boss"..dis. 50&10 %
Harness Snaps.
Henshaw's...List of 1½ changed to 14.00, dis 55 @ 60 %
Judd's...... " " " 14.00, dis 55 @ 60 %
Fitch's (Bristol) " " 14.00, dis 55 @ 60 %
Hotchkiss'..dis 10 %
Andrews'..dis 50 %
Sargent's...dis 65&10 %
"German...dis 75 %
Covert..dis 40 %
Covered Spring..dis 45&10 %
Hatchets.
Isaiah Blood..dis 15
Shingling, Nos. 1 2 3........₩ doz $7.25 $8.00 $8.75
Claw, Nos. 1 2 3........₩ doz 7.75 8.50 9.25
Lathing. Nos. 1 2 3........₩ doz 7.50 8.00 8.50
Hunt's..dis 25 %
Shingling, Nos. 1 2 3........₩ doz $7.25 $8.00 $8.75
Claw, Nos. 1 2 3........₩ doz 7.75 8.50 9.25
Lathing, Nos. 1 2 3........₩ doz 7.50 8.25 9.00
Hurd's..dis 35 @ 40 %
Shingling, Nos. 1 2 3........₩ doz $8.00 $8.50 $9.00
Claw, Nos. 1 2 3........₩ doz 9.00 9.50 10.00
Lathing, Nos. 1 2 3........₩ doz 8.00 8.50 9.00
Yerkes & Plumb..dis 30 %
Shingling, Nos. 1 2 3........₩ doz $7.50 $8.00 $8.50
Claw, Nos. 1 2 3........₩ doz 8.25 8.75 9.25
Lathing Nos. 1 2 3........₩ doz 7.50 8.00 8.50
Simmon's..dis 20
Shingling, Nos. 0 1 2 3....₩ doz $7.50 $8.00 $8.50 $9.00
Claw, Nos. 1 2 3....₩ doz 9.00 9.50 10.00
Lathing, Nos. 1 2 3....₩ doz 8.00 8.50 9.00
Broad, Nos. 1 2 3 4....₩ doz 9.00 10.00 12.00 14.00 %
" Nos. 5 6 7 8....₩ doz 16.00 18.00 20.00 22.00
Collins...dis 10
Shingling, Nos. 1 2 3........₩ doz $6.00 $6.50 $7.00
Claw Nos. 1 2 3........₩ doz 6.50 7.00 7.50
Lathing, Nos. 1 2 3........₩ doz 6.00 6.50 7.00
Hay Knives.
"Lightning"...............................₩ doz $20.00 net
Wadsworth's...dis 33⅓ %
Hinges.
Gate, Western.......................₩ doz $6.25, dis 60&10 %
" N. E...............................₩ doz $10.13, dis 65 %
" N. E. Reversible..................₩ doz $6.50, dis 60 %
Gate, Clark's No. 1................₩ doz $0.00, dis 60 %
" N. Y. State......................₩ doz $0.50, dis 65 %
" Automatic........................₩ doz $12.50 dis 40 %
" Common Sense............................dis 20&10 %
" Seymour's...............................dis 40&10 %
" Shepard's................Nos. 10, 20 & 25, dis 65 %
Rolled Blind Hinges.......................dis 60&10&10 %
Rolled Plate..............................dis 60&10&10 %
Rolled Raised.............................dis 6 &10&10 %
Plate Hinges { 8, 10 & 12 in. $5.55 ₩ 100 ℔ }
"Providence" { over 12 in. $4.25 ₩ 100 ℔ } ....dis 10 %
Screw Hook and { 8, 10, 12 in., $5.75 ₩ 100 ℔ } dis 10 %
Strap. { 14 to 36 in.. $4.25 ₩ 100 ℔ }
Heavy Welded Hook { 8 to 12 in.. $5.55 ₩ 100 ℔ } dis 10 %
{ 14 in. & up, 4.25 ₩ 100 ℔ }
Screw Hook and Eye........ { ⅝ & 1 in., 90 } dis
{ ¾ in. 90 } 20 %
{ ⅞ in. 10c }
{ ½ in. 12c }
Wrought Strap and T. list Dec. 20, '77 ...dis 50&10&10 %
Hoes.—Riveted Shank.........per doz, $5.00; dis 35 %
Socket.............................₩ doz $5.25, dis 35 %
Grub......................................dis 15 %
Planters'.................................dis 35 %
Scovill Pattern...........................dis 20&10 %
Scovill Pattern, Handled..................dis 25 %
Hick's Pat. Solid C. S. Planters'......dis 20&10 @ 30 %
" " Scovill Pattern dis 20&5 @ 35 %
Winsted & Lane, Planters..................dis 25 %
" " Scovill Pattern......dis 20@25 %
Magic...........................per doz, $5; net
Hooks.
Bird Cage, Sargent's list.................dis 60&10 %
" Reading.................................dis 40&10 %
Cotton.........................per doz. $4, dis 50 %
Cotton, Patented (N. Y. Mallet & Handle Wks), dis 30 %
Cotton (Humason & Beckley Mfg. Co.).......dis 40 %
Belt......................................dis 60&10 %
Bench—Hotchkiss', $5.00 ₩ doz...........dis 10 %
" Weston's, No. 1, $10.00; No. 2, $9.00 ₩ doz dis 25 %
" McGill's, $3.00 ₩ doz...................dis 20 %
" Skinner's, $6.25 per doz.................dis 20 %
Clothes Line Sargent's list..............dis 66⅔&10 %
" " Reading list.........................dis 40&10 %
Ceiling.. } Sargent's list.................dis 60&10 %
Harness. } Reading list.....................dis 40&10 %
Coat and Hat, Sargent's list..........dis 60&10&10 %
" " Reading..................dis 40&10&10 %
Picture Hooks, Brown's Pat. Solid Brass, $4 per gross.......................................dis 25 %
Tassel (T. & S. Mfg. Co.).................dis 40 %
Wrought Staples and Hooks and Staples....dis 75&10 %
" Staples, Stanley's list.................dis 65&10 %
Wire Screw Hooks and Eyes.................dis 60&10 %
Grass and Bush............................dis 40@45 %
Whiffletree—Patent........................dis 40 %
Hooks and Eyes—Malleable Iron.............dis 65&10 %
" " Brass.................................dis 65&10 %
Horse Nails

	Nos. 5	6	7	8	9	10	
Ausable, ₩ ℔	...31c	28c	26c	25c	24c	23c	......dis 30 %
Clinton, "	...	23c	21c	20c	19c	18c	....dis 20 %
Putnam, "	...31c	28c	26c	25c	24c	23c	...dis 10&20 %
National, "	...25c	23c	21c	20c	19c	18c	...dis 20&10 %
Vulcan, "	...28c	25c	23c	22c	21c	20c	....dis 10 %
Globe, "	...28c	25c	23c	22c	21c	20c	....dis 10 %

Horse Shoes.—Burden....................₩ keg $4.37½
R. I. Horse Shoe Co., Perkins' Improved Light, Medium and Heavy..........................₩ keg 4.37½
Mule Shoes..................................₩ keg 5.37½
Ice Awls, Chisels, &c.
American Ice Chisel.....................₩ doz. $3.50 net
National ....₩ doz $0.25 dis 20 %
Novelty Ice Breakers.............₩ doz $6.25 dis 20 %
White's Sliding Head Picks.......₩ doz $2.50 dis 40 %
Dunlap's King Picks.............₩ doz $3.00, dis 40&10 %
Wood Head Picks, Sargent's......₩ doz $1.60, dis 40&10 %
Iron " ....₩ doz 1.25, dis 40&10 %
Ice Mallets Pick in Head..................₩ doz 1.75 net
" Pick in Handle...........................₩ doz 2.00 net
Ice Axes, Small, Cast or Malleable..₩ doz 1.20 dis 10 %
Kitchen Ice Tongs.........................₩ doz 2.25 net
Combination Ice Tools......................₩ doz $200 net
Kettles.
Brass, 7 to 13 inches inclusive...........₩ ℔ 32c net
Brass, larger than 13 inches...............₩ ℔ 35c net
Enameled..................................dis 45 %
Knives.
Ames' Butcher Knives......................dis 20 %
" Shoe " ....dis 15 %
" Bread " ....₩ doz $1.50, dis 15 %
Moran's Shoe and Bread Knives.............dis 20 %
Hay and Straw— Wadsworth's"...............dis 33⅓ %
Table and Pocket..........................See Cutlery
Knobs.
Carriage (Jap'd 80c. ₩ gross)............dis 60 &10%
Base—Common...............................dis 30&10%
Hemacite Door Knobs.............New list, dis 35&5 %
Door, Mineral..... }
" Por Jap'd..... }
" " Plated.... } Same discounts as Door Locks.
" " Por......... }
Furniture, Plain...........750 gross inch, dis 10 %
" Wood Screws..............................dis 10 %
Picture (T. & S. Mfg. Co.)................dis 50&10 %
" Sargent's...............................dis 60&10 %
Hemacite Picture..........................dis 35 %
Shutter, Porcelain........................dis 50&10 %

Ladles.
Melting—Sargent's.........................dis 50&10 %
" Reading..................................dis 30&10 %
" Monroe's Patent.........₩ doz $4.00, dis 40 %
" P. S. & W................................dis 30&10 %
Lanterns.
Tubular...................No. 0, $8.65; No. 1, $10.15 } net
With Guards 35c extra. }
Hurricane No. 2......................₩ doz $5.75, net
Peerless........................No. 5, ₩ doz $11.75, dis 10&10 %
Brady's Patent............................dis 10&10 %
Ætna......................................dis 10&20 %
Yankee....................................dis 10&10 %
De Beque..................................dis 10&10 %
Police..Small, $7.00; Med., $8.25; Large, $12.00, dis 10 %
Convex Reflector.....................$2.75 ₩ doz, dis 10 %
Lawn Mowers.
Pennsylvania, Philadelphia and Excelsior, new list......................................dis 30 %
Lemon Squeezers.
Porcelain Lined...............₩ doz $6.00—dis 30 %
Wood..........................₩ doz $3.00—dis 30 %
Eureka, Tinned................₩ doz $8.00—dis 10 %
Dunlap's Improved.....................₩ doz $4.00 net
Sammis'......No. 1, $7.00; No. 2, $12.00 ₩ doz; dis 45 %
Townsend's Patent...............$6.00 ₩ doz., dis 33⅓ %
Lines.—Linen Fish......................dis 25&10 %
Cotton Chalk..............................dis 55 %
Sil. Lake Chalk....Nos. 0, 1, 2, 3, $6.00, $6.50, $7.00, $7.50.......................................dis 25 %
Mason's Linen.............................dis 25&10 %
Wire Clothes, Galvanized.......each 25 @ 40c net
Locks and Latches.
Cabinet—Eagle.......... } Changes made in list price of
" Gaylord........ } some numbers Jan. 1, 1881,
" Bridgeport.... } dis 25&2 %
" A. E. Deitz.............................dis 30@40 %
Trunk, new list, Jan. 1, 1881.............dis 20&2 %
Langstroth & Crane's List Jan. 1 '77.
Round Key, No. 1 to 5.....................dis 40&10 %
" No. 1½ to 12..........................dis 40& 10 %
Flat Key..................................dis 33⅓&10 %
A. E. Deitz, Flat Key.....................dis 30 %
Yale Lock Co., Flat Key...................dis 40 %
"Shepardson" or "U. S."...................dis 35 %
"Fetter" or "American"....................dis 33⅓ %
Plate.....................................dis 33⅓&2 %
F. Many's "Extension Cylinder".....$10.50 ₩ doz, net

DOOR LOCKS, &c

Branford.......... }
Norwalk........... }
Norwich........... }
P. & F. Corbin.... } List of June 10, with changes
Russell & Erwin... } of Dec. 1, 1880.
Mallory, Wheeler & Co... } dis 45&2 %
Reading Hardware Co... }
Trenton Lock Co... }
Padlocks—Russell & Erwin........... } ....dis 40
" Mallory, Wheeler & Co.... } and 2 % for cash
" Wm. Wilcox & Co........ }
" Yale Lock Mfg. Co.'s "Standard"...dis 40 %
" Romer's..................................dis 30 %
" Conestoga................................dis 60 %
" J. H. McWilliams.........................dis 10 %
" A. E. Dietz..............................dis 25 %
Lustro.—4-oz. bottles, per doz, $2; per gro, $18; net
Mallets.—Hickory..........................dis 10&10 %
" Lignumvitæ.................................dis 10 %
Penfield Block Works, Lig., Apple & Hickory..dis 30 %
Meat Cutters.
Dixon's (P. S. & W.) Nos. 1 3 4
₩ doz..$14.00 17.00 19.00 30.00—dis 35 %
Miles' Challenge.........Nos. 1 2 3
₩ doz..$22.00 30.00 40.00—dis 35 %
Perry's Nos. 1 2 3 4 4 g'rd 5 g'rd
Each.......$3.00 4.00 5.00 11.00 13.00 36.00—dis 30 %
Woodruff's (P. S. & W.)....Nos. 100 150
₩ doz $15.00 18.00 dis 35 %
Hales'........Nos. 11 12 13
₩ doz..$27.00 33.00 45.00..dis 40&10&2 %
Draw Cut.....Nos 5 2 6 8 10
Each..$50.00 75.00 80.00 225.00 400.00—dis 20 %
American..................................dis 25 %
Nos........ 1 2 3 4 B 5
Each $5.00 7.00 10.00 25.00 50.00 60.00
Kieser's No. 55.................$40 per doz., dis 40 %
" Gem.....................$25 per doz, dis 40 %
Silver & Deming...........................dis 25 %
Pennsylvania..............................dis 40&10 %
Nos................... 1 2 3 00
₩ doz...............$24.00 28.00 36.00 28.00
Beef Shavers (Enterprise Mfg. Co).........dis 25 %
Mincing Knives.
Am., (2d quality) per gross, 1 blade, $7; 2 blades, $12; 3 blades, $18.....................................net
Lathrop's.................................dis 10&10 %
Smith's..per doz, Single, $1.35; Double, $1.80; dis 10 %
Cowles Hdw. Co............................dis 40&10 %
Molasses Gates.
Stebbins' Pattern.........................dis 75&10 %
" Genuine..................................dis 75&5 %
" Tinned Ends..............................dis 40&10 %
Chase's Hard Metal........................dis 50&10 %
Bush's....................................dis 20 %
Lincoln's Pattern.........................dis 50&10 %
Weed's....................................dis 15 %
Boss, No. 1 2 3 4
$7.00 $8.00 $9.00 $10.00 per doz.
" Japanned Finish..........................dis 50&10 %
" Bronze " ....dis 45&10 %
Nails..............................See Trade Report
Nuts and Washers.
Square Nuts...............................7½c off list
Hexagon Nuts..............................7½c off list
Washers...................................7½c off list
Nut Crackers
Table (Humason & Beckley Mfg. Co.).........dis 33⅓ %
Blake's Pattern.................₩ doz $2.50, dis 10 %
Turner & Seymour Mfg. Co..................dis 40 %
Oakum.
Best......................................₩ ℔ 11c
U. S. Navy................................₩ ℔ 10c
Navy......................................₩ ℔ 8½c
Oilers.—Zinc and Tin....................dis 50 %
Brass and Copper..........................dis 40 %
Malleable (Hammer's)...........₩ doz $6.00, dis 10 %
Prior's Patent or "Paragon Zinc..........dis 50 %
" " Brass.................................dis 40 %
Olmstead's, Tin and Zinc..................dis 50 %
" Brass and Copper..........................dis 40 %
Broughton's, Zinc.........................dis 40 %
" Brass......................................dis 30 %
Ox Balls...............................dis 40&10 %
Pencils.
Faber's Carpenters'.............High list, dis 40&10 %
" Round Gilt...................₩ gross $5.25 net
Dixon's Lead.......................₩ gross 4.50 net
" Lumber..............................₩ gross
Dixon's Carpenters'.......................dis 40 & 10 %
Packing, Steam.
N. Y. Belting and Packing Co..............dis 20 %
Picture Nails.
Brass Head, Sargent's List................dis 50&10 %
" T. & S. Mfg. Co.........................dis 40 %
Porcelain Head, Sargent's List............dis 50&10 %
" " Judd's List...........................dis 30 %
Porcelain Head, T. & S. Mfg. Co...........dis 33⅓ %
Niles' Patent.............................dis 25 %
Picks and Mattocks.....................dis 35 %
Pinking Irons..............................₩ doz 75c, net
Plaiting Machines.
Magic.....................................₩ doz $10.00, net
Astor Plaiting Machine.............each $15.00, dis 20 %
Crown Plaiting Machines...................dis 25 %
6 in., $6.00. 10 in., $10.00 each
Planes and Plane Irons.
Bench, First Quality......................dis 25&10 %
" Second " ....dis 30&10 %
Moulding..................................dis 25&10 %
Bailey's (Stanley R. & L. Co.) new list Jan. '79.dis 20&10 %
The Stanley (S. R. & L. Co.) " " dis 20&10 %
Bailey's "Victor".........................dis 20&10 %
Defiance Adjustable.......................dis 20&10 %
Laflin Mfg. Co............................dis 35 %
Plane Irons, Butcher's....................$5.50 to £
" Buck Bros..................................$5.00 to £
" Auburn Tool Co.'s..........................dis 20 %
" The Globe Mfg. Co. "Baldwin Iron".......dis 20 %
" Ohio Tool Co...............................dis 20 %
" Sandusky Tool Co...........................dis 20
Pliers and Nippers.
Button's Patent...........................dis 33⅓ %
Hall's Pat. Compound Lever Cutting Nippers No. 2; 5 in. $20; No. 4, 7 in., $30 ₩ doz..........dis 45 %
Humason & Beckley Mfg. Co.................dis 33⅓ %
Gas Pliers................................dis 60 %
Eureka Pliers and Nippers.................dis 25 %
Russell's Parallel........................dis 25 %
P. S. & W. Cast Steel.....................dis 35 %
" Tinners' Cutting Nippers....................dis 15 %
Plumbs and Levels.
Disston's.................................dis 40 %
Stanley R. & L. Co.'s Pat. Adjustable.....dis 65&10 %
" " Non-Adjustable......dis 25&10 %
Chapin's Patent Adjustable................dis 65&10 %
" Non-Adjustable.............................dis 25&10 %
Standard Rule Co.'s New Adjustable........dis 60&10 %
" " Non-Adjustable.........dis 60&10 %
Johnson's Patent Adjustable...............dis 60&10 %
Pocket Levels.............................dis 65&10 %
Davis' Inclinometers......................dis 20 %
Post Hole and Tree Augers.
Samson Post Hole Digger........per doz $37.50, dis 20 %
Fletcher Post Hole Augers.........₩ doz 36.00, dis 20 %
Vaughan's Post Hole—
6 in. $23.60; 7, 8 and 9 in. $25 per doz.......dis 15&10 %
Eureka Diggers ₩ doz. $40.00..............dis 25&10 %
Pruning Hooks and Shears.
Disston's Combined Pruning Hook and Saw
per doz $19.00, dis 20 %
" Pruning Hook..... " 12.50, dis 20 %
E. S Lee & Co.'s Pruner...................dis 30 %
Pruning Shears..................₩ doz $5.50@$8.00
Pulleys.
Hot House and Tackle......................dis 60&10 %
Jap'd Screw...............................dis 60&10&10 %
Brass Screw...............................dis 60&10 %
Jap'd Side................................dis 60&10&10 %
" Clothes Line................................dis 60&10 %
Hay Fork Solid Eye, ...$4.50; Swivel, $5.00, dis 5 &10 %
" " "Anti-Friction."............$7.50 dis 40&5 %
" " "F" Common and Pat. Bushed........dis 20 %
" " Tarbox Pat. Iron.......................dis 20 %
Shade Rack................................dis 50 %
Punches.
Belt or Drive...........₩ doz $2.00; 2.25; 2.50, dis 50 %
Bemis & Call Co.'s Cast Steel Drive.......dis 50&5 %
" " Springfield Socket.................dis 50&5 %
Spring.....................₩ doz $7.00, dis 50&5 %
" Leach's Patent..............................dis 15 %
Bemis & Call Co.'s Spring and Check.......dis 40 %
Solid, Tinners'...................₩ doz $1.44, dis 40 %

Rail.
Sliding Door Wrought Brass......₩ ℔ 43c dis 20 2
" " Iron, Painted .₩ foot 4c.dis 10&10
Barn Door....Inch......... ⅜ ⅝ ¾
Per 100 feet. $2.00 3.60 5.60—dis 10 2
" for N. E. Hangers— Small. Med. Large.
Per 100 feet. .. ..$2.10 2.70 3.30—net

Razors.
J. R. Torrey Razor Co..............................dis 15 %

Razor Straps.
Genuine Emerson..............................dis 55 %
Badger's Emerson..............................dis 40 %
Badger's (not Emerson)..............................dis 30 %
Evans'..............................dis 50
Imitation Emerson.............. ₩ doz $2.00. dis 20 %
Hunt's..............................dis 40&5 %
Chapman..............................dis 15 @ 20 %
Saunders's..............................dis 10 %
Torrey's..............................dis 20 %

Rivets.
Iron and Tinned..............................dis 60 %
In bulk, list of May 21..............................dis 50 %
Copper Rivets and Burs..............................dis 33⅓ %
Nos.. 8 9 10 11 12 13 14 15 &c
₩ ℔..49c 50c 52c 54c 56c 58c 60c 65c 70c4 %
Burr's..............................dis ....

Rivet Sets.... ....

Rods.
Stair, Brass..............................dis 8 %
Stair, Black Walnut..............................dis 20&10 %
Stair, American Patent..............................dis 20 %

Rollers
Barn Door, Sargent's list..............................dis 55&10 %
Novelty..............................dis 10 %
Acme (Anti-Friction)..............................dis 50 %

Rope. Manufacturers' Net List, Feb 24 1881
Manila.............⅝ inch and larger ₩ ℔ 14½c
" .... ⅜ inch ₩ ℔ 15 c
" ....¼ and 5-16 inch ₩ ℔ 15½c
" Tar'd Rope..............................₩ ℔ 14 c
" Lath Yarn..............................₩ ℔ 14 c
" Hay Rope..............................₩ ℔ 14½c
Sisal.............½ inch and larger ₩ ℔ 11½c
" ....⅜ inch ₩ ℔ 12 c
" ....¼ and 5-16 inch ₩ ℔ 12½c
" Hay Rope..............................₩ ℔ 11½c

Rules. Boxwood. Ivory.
Chapin's. } dis 70&10 % } dis 60&10 %
Standard....
Stanley....

Sad Irons.
From 2 to 10 lbs..............................₩ ℔ 3⅝c net
Self Heating..............................₩ doz $9.00 net
" Tailors'..............................₩ doz $18.00 net
Cleason's Shield and Toilet..............................dis 25 %
Mrs. Pott's Irons, Double Pointed..............................dis 35 %
Mrs. Pott's Irons, Square Back..............................dis 40 %
Enterprise Star Irons..............................dis 40 %
Combined Fluter and Sad Iron..per doz $15.00, dis 15 %

Sand Paper.
Baeder & Adamson's Flint, 00 to 1½..$4.75 ₩ ream } dis 25&30 %
" " " 2, 2½ & 3. 5.25 ₩ ream
" " " Assorted 4.75 ₩ ream
" " Star.............. 3.75 ₩ ream
" " Emery..₩ ream $6.50 @ 11.50
Partles Flint, same list as B & A..............................dis. 25%
" Harrison, $3.75 per ream..............................dis 25%
New England, same list as B. & A. Flint..............................dis 25 %
Gage's..............................dis 20&5 %

Sash Cord.
Common..............................₩ ℔ 14 @ 20c net
Patent..............................₩ ℔ 10c net
Silver Lake Russia Flax..............................₩ ℔ 6 c. dis 10 %
White Cotton..............................₩ ℔ 60c. dis 10 %
Drab Cotton..............................₩ ℔ 66c. dis 10 %
Paw Hide..............................dis 25 %
Steel Ribbon..............................dis 10 %

Sash Locks.
Clark's, No. 1, $10.50; No. 2, $8.00 per gross.....dis 33⅓%
Ferguson's..............................dis 33⅓ %
Walker's..............................net
Hammond's Window Springs..............................dis 25 %
Northup Window Springs, No. 1, $10.00; ₩ gross.dis 15 %
Tip Perfect, Clark & Smith,Plain Jap'd ₩ gro $10.00 net
" " Por.Knob Jap'd.₩ gro 14.00 net
" " Nickel-Plated...₩ gro 27.00 net
"Universal"..............................dis 30 %

Sash Weights.—Solid Eyes, in 500 ℔ lots and over.............₩ ℔ 1⅜c net

Sausage Stuffers or Fillers.
Miles..............................₩ doz $20, dis 30 %
Perry.......... ₩ doz, No. 15: No. 0, $21, dis 35 %
Fraw Cut No. 4..............................each $30.00, dis 20 %
Enterprise Mfg. Co..............................dis 25 %
Silver's..............................dis 25%

Saws.
Disston's Circular..............................dis 40 %
" Mill..............................dis 40 %
" Cross Cut..............................dis 40 %
" Hand, Panel, Rip, &c..............................dis 20 %
Boynton's Lightning, Cross Cuts, new list..............................dis 20 %
" One-Man, all lengths, "..............................dis 20 %
" Billet Webs, 30 in. "..............................dis 25 %
" Lightning Buck Saws X Far..............................dis 25 %
" Lightning Hand, Panel and Rip......dis 25 %
Wheeler & Clemson Mfg. Co.'s Hand..............................dis 20 %
W. M. & C. Mfg. Co. Cross-Cuts, except Monarch, dis 20 %
Livingston's Butcher and Kitchen..............................dis 20 %
" Framed Wood—
Nos..... 101 102 103 104 105
Per doz..$10.00 8.50 10.00 7.50 5.25 net

Saw Frames.
White, Vermont..............................₩ doz $1.35,dis 25 %
Red, Polished and Varnished..............................₩doz $2.00, dis 25 %
Saw Rods..............................$10 list dis, 10&10 %

Saw Sets.
Boynton's Patent X Cut, per doz. $12.00; Hand Saw, per doz.. $10.00..............................dis 20 %
Stillman's Genuine.......... ₩ doz $3.50 and $5.50 dis 10 %
" Imitation..........₩ doz $3.25, dis 50&10 %
Common Lever..............................per doz $2.00, dis 30&10 %
Leach's..............................No. 0, $8.00; No. 1, $15.00, dis 15 %
Nash's..............................No. 1 $8.50; No. 2, $5.50, dis 20&10 %
Hammer, Hotchkiss..............................$6.50, dis 10 %
" Bemis & Call Co.'s New Pat..............................dis 40&5 %
Bemis & Call Co.'s Lever & Spring Hammer..dis 30&5 %
" " Plate..............................dis 10 %
" " Cross Cut..............................dis 12½ %
Aiken's Genuine..............................$13.00 dis 50&10 %
" Imitation..............................$7.00. dis 10 %
Hart's Patent Lever..............................dis 20 %
Disston's..............................dis 20 %

Scales.
Hatch, Counter, No. 171.......... ₩ doz $36, dis 35&10 %
" Tea, No. 161.............. ₩ doz $15.00 dis 30&10 %
Union Platform..............................$6.00. dis 45 %
Fairbanks'..............................dis 20 %
Buffalo Scale Co..............................dis 40&5 %
Howe's..............................dis 20&5 %
Chatillon's Grocers'..............................dis 45 %
" Eureka..............................dis 25 %
Family Universal..............................dis 50 %
" Favorite..............................dis 50 %
" Turnbull's..............................dis 50 %
Scale Beams, Chatillon's list..............................dis 10 %
" Sargent's list..............................dis 50&10 %

Scrapers.
Adjustable Box Scraper (S. R. & L. Co.), $6.50.dis 20&10 %
Box, 1 Handle..............................₩ doz $4.00, dis 10 %
" 2 "..............................₩ doz 6.00 dis 10 %
Defiance Box and Ship..............................dis 20&10 %
Foot..............................dis 55 %
Ship (common)..............................per doz $3.00 net
" (Providence Tool Co..............................dis 10 %

Screw Drivers.
Douglass Mfg. Co..............................dis 20&10&10 %
Disston's..............................dis 40 %
Disston's Patent Excelsior..............................dis 40 %
Buck Bros..............................dis 25 %
Stanley Rule & Level Co.'s, Varnished Hdls..dis 50&10 %
" " Black Handles...dis 40&10 %
Sargent & Co.'s..............................dis 50&10 %
Gay's Double Action Ratchet per doz., 4 in., $9.00; 5 in., $10.20; 6 in., $12.00 dis 30 %
Cowles Hdw. Co., No. 1 Extra..............................dis 40&10 %
" " No. 1..............................dis 50&10 %
" " Nos. 4 and 50..............................dis 30 %

Screws.
Flat H'd Iron..............................dis 40 %
Round Head Iron..............................dis 35 %
Flat Head Brass..............................dis 40 %
Round Head Brass..............................dis 30 %
Brass and Silver Capped..............................dis 40 %
Japanned, list of Plain Screws..............................dis 25&10 %
Coach Patent Gimlet Point, List per 100..............................dis 60 %
Coach, Common..............................dis 60&10 %
Bed..............................dis 10 %
Machine, Flat Head, Iron, Am. Screw Co..............................dis 60 %
" Round Head, Iron, "..............................dis 55 %
Bench, Iron..............................dis 60&10 %
" Wood, Beech.............. ₩ doz $3.00, dis 10 %
" " Hickory..............................dis 20&10 %
Hand..............................dis 25&10 %
Hand Rail, Sargent's..............................dis 66⅔&10 %
" " Humason, Beckley & Co's..............................dis 50 %
" " Am. Screw Co., list of Jan. 1, '81.dis 60&10 %
Jack (Wilson's)..............................dis 20 %

Screw Window Balances.
R. B. Huguain's..........$36.00 per gross, dis 25&10&5 %

Scroll Saws.
Lester, $10.00..............................dis 20 %
Rogers, $3.50..............................dis 25 %

Shears and Scissors.
American (Cast) Iron..............................dis 70&10 %
Clipper Cast Iron..............................dis 70&10
Pruning..............................see Pruning Hooks and Shears.
Barnard's Lamp Trimmers..............................₩ doz $5.75
Tinners'..............................dis 15 %
Seymour's, List, Nov. 25, 1879..............................dis 60&10 %
Heinsch's "..............................dis 60 %
" Tailors' Shears..............................dis 33⅓ %
Mass. Cutlery Co. St. Trimmers..............................dis 75 %

Sheaves.
Sliding Door, M. W. & Co., list..............................dis 45&2 %
" R. & E. list..............................dis 60&10&2 %
" Patent Roller..............................dis 10 %
" " Hatfield's..............................dis 65&10&2 %
" Russell's Anti-Friction..............................dis 65&10&2 %
" Moore's Anti-Friction..............................dis 45 %
Sliding Shutter, R. & E. list..............................dis 60&10&2 %
" " Sargent's list..............................dis 60&10 %
" " Reading list..............................dis 55&10 %
Moore's Anti-Friction (Hanging)..............................dis 45 %

Shovels and Spades.
Ames, New list, Jan. 26, 1880..............................dis 12½ %
Hussey Binns & Co., Patent..............................dis 15 %
" " Association List..............................dis %
Old Colony..............................dis 12½ %
Remington's (Lowman's Patent)..............................dis 25 %
Rowland's..............................dis 40 %
Griffiths..............................dis 40&10 %

Shovels and Tongs.
Iron and Brass Head, R. & E. list..............................dis 50&10&2 %
Polished Steel..............................new list, dis 50&10&2 %

Slates.
Square Frames..............................by case......dis 70 %
Less than a case..............................dis 65&10 %

Spoke Shaves.
Defiance Metallic..............................dis 20&10 %
Iron..............................dis 45 %
Wood..............................dis 30&10 %
Bailey's (Stanley R. & L. Co.) new list..... dis 30&10 %
Stearns'..............................dis 25&10 %

Spoke Trimmers.
Bonney's..............................₩ doz $10.00 dis 40&5 %
Stearn's..............................₩ doz $10.00 dis 40 %
Ives'......No. 1, $15.00; No. 2, $12.00 ₩ doz, dis 50&10 %
Douglass'..............................₩ doz $9.00. dis 15 %

Spoons.
Basting..............................dis 55 %
Riveted Table and Tea..............................dis 55 %
Solid Table and Tea..............................dis 55 %
Britannia..............................dis 70 %
The Wm. Rogers Mfg. Co..............................dis 40&5&5 %
Reed & Barton..............................dis 40&5&5 %
Hall & Elton..............................dis 40&5&5 %
Holmes, Booth & Haydens..............................dis 40&5&5 %
German Silver..............................dis 20&10&5 %
Cast Steel, Sil. Plated..............................dis 33⅓ %
Tin (P. S. & W.), Teas..............................$1.25 ₩ gross, net
" " Tables..............................$2.00 ₩ gross, net
Tin Cowles Hdw. Co.)..............................dis 10 %
" " " case lots..............................dis 20 %

Stocks and Dies.
"Lightning" Screw Plate..............................dis 5&10 %
..............................dis 10 %

Stone.
Hindostan Hacker Stone..........₩ gross $12.00 dis 10 %
Sand Stone..............................₩ ℔ 6c. dis 33⅓&10 %
Washita Stone..............................No 1. ₩ ℔ 18c net
" ....No 2. ₩ ℔ 15c net
" Slips..............................No. 1, ₩ ℔ 40c net
Arkansas Stone No. 1, 4 to 6 in..............................℔ ₩ $1.35 net.
" No 1, 6 to 9 in..............................℔ ₩ $2.00 net
Turkey Oil Stone (Chase)..............................4 to 8in, $1.00 ₩ ℔,
" Slips "..............................$2.50 ₩ ℔ dis 10 %
Lake Superior (Chase)..............................₩ ℔ 20c, dis 10&5 %
" Slips "..............................₩ ℔ 45c, dis 10&5 %
Grindstones, Family, Loring's..............................dis 10 %

Stove Polish.
Joseph Dixon's..............................₩ gross $6.00 dis 10 %
Gem..............................₩ gross $4.50, dis 10 %
Gold Medal..............................₩ gross $6.00, dis 25 %
"Mirror"..............................₩ gross $6.00, dis 5 %
Ruby..............................₩ gross $3.75, net
Rising Sun..............................₩ gross $5.75, net
Dixon's Plumbago..............................₩ ℔ 8c, net

Squares.
Steel..............dis 50 %; full cases, dis 50&10 % } 2 % cash
Iron..............dis 50 %; full cases, dis 50&10 %
Nickel Plated.......add $2.50 @ $4.00 ₩ doz. net
Try Squares and T Bevels..............................dis 50&10
Disston's Try Square and T Bevels..............................dis 40 %
Winterbottom's Try and Mitre..............................dis 20&10 %

Tacks, Brads, &c.
List of April 2, 1880
Tinned Swedes Tacks..............................dis 45 %
Tinned American "..............................dis 55 %
Swedes Tacks, all kinds..............................dis 20 %
Copper Tacks and Nails..............................dis 30 %
Swedes Hungarian Nails..............................dis 30 %
American " "..............................dis 30 %
Gimp and Lace Tacks..............................dis 30 %
Finishing Nails..............................dis 25 %
Trunk and Clout Nails..............................dis 25 %
Common and Patent Brads..............................dis 20 %
Basket Nails..............................dis 25 %
Brush Tacks..............................dis 20 %
Leathered Carpet Tacks..............................dis 20 %
American Cut Tacks..............................dis 25 %
Cigar Box Nails..............................dis 25 %
Chair Nails..............................dis 25 %
(Extra 10 % on all.)
Double-Pointed Tacks..............................dis 40&5 %

Tap Borers.
Common and Ring..............................dis 15 %
Ives' Tap Borers..............................dis 15&10 %
Enterprise Mfg. Co..............................dis 25 %

Tapes, Measuring.
American..............................dis 20 %
Spring Tapes..............................dis 25&10 %

Thermometers.
Tin Case..............................dis 70 %

Tobacco Cutters.
Enterprise Mfg. Co. (Champion)..............................dis 25 %
Wood Bottom..............................₩ doz $12.00, dis 40&5 %
All Iron..............................₩ doz $9.50, dis 40&5 %
Nashua Lock Co.'s..............................₩ doz $18.00, dis 50@55 %

Toe Calks.—Winsted.............. ₩ ℔ 9c. dis 5

Tinners' Tools and Machines.
Machines (P. S. & W.)..............................list add 20 %
Tools (P. S. & W.)..............................add 6 %

Transom Lifters.
Wollensak's Patent..............................dis 35 %
Richer's Patent..............................dis 20&10&10 %

Traps.
Game, Newhouse..............................dis 30 %
" Oneida Pattern..............................dis 50 @ 55 %
" Blake's Patent..............................dis 40 %
Mouse, Wood, Choker..............................₩ doz holes, 16½c
" Round Wire..............................₩ doz $1.50, dis 10 %
" Cage "..............................₩ doz $2.50, dis 10 %
" Catch-em-alive..............................₩ doz $2.50, dis 10 %
Rat, "Decoy"..............................per doz $10.00, dis 10 %

Trowels.
Lothrops Brick and Plastering..............................dis 25 %
Reed's Brick and Plastering..............................dis 15 %
Disston's Brick and Plastering..............................dis 20 %
Peace's Plastering..............................dis 30 %
Clement & Maynard's..............................dis 20 %
Rose's Brick..............................dis 15 %
Brades' Brick..............................dis 20 %
Worrall's Brick and Plastering..............................dis 20 %
Garden..............................dis 55&10 %

Triers.
Butter and Cheese..............................dis 25%

Vises.
Solid Box..............................List of July 1, '79 dis 30 %
" "Crown" (A. H. Hildick) 40 to 100 ℔, 15c net
" Peter Wrights..............................15½c
" Wilkinson's..............................13½c
Parallel, Parker's..............................dis 10 %
" Wilson's..............................dis 40 %
" Howard's..............................dis 20&10 %
" Merrill's..............................dis 15 %
" Sargent's..............................dis 60&10 %
" Trenton..............................dis 20 %
" Backus and Union..............................dis 30 %
" Oval Slide..............................dis 40 %
" Double Screw Leg..............................dis 15&10 %
" Prentiss..............................dis 25 %
" Simpson's Adjustable..............................dis 25 %
"Family," List..............................net
Saw Filers, Bonney's..............................₩ doz $24.00, dis 20&10 %
" Stearn's..............................dis 20&10 %
" Hopkins'..............................₩ doz $17.50 dis 10 %
Reading..............................dis 40&10 %
Lowell Hand Vises..............................dis 20 %
Richardson's Vise and Anvil..............................dis 25 %

Washer Cutters.
Smith's Patent..............................₩ doz $12.00 dis 25 %
Johnson's..............................₩ doz $12.00, dis 33⅓ %
Penny's.............. ₩ doz $14.00 and $16.00, dis 45 %
Appleton's..............................₩ doz $16.00, dis 60&10 %

Washers.—See Nuts and Washers.

Well Wheels.—Revised list..............................dis 60&10%

Wire.
Brass and Copper... ... List of June 10, 1880....dis 20 %
Bright and Annealed..............................Nos. 0 @ 18, dis 55 %
" "..............................Nos. 19 @ 26, dis 60 %
" "..............................Nos. 27 @ 36, dis 65 %
Coppered..............................Nos. 0 @ 18, dis 50 %
Galvanized, Nos. 0 to 6..............................₩ ℔ 10c, dis 40 %
" Nos. 7 to 18..............................market list, dis 40 %
Tinned Nos. 0 to 18..............................dis 45 %
Cast Steel..............................dis 30 %
Tinned Broom Wire, Nos. 18 to 25..............................dis 50 %
Annealed Fence, Nos. 8 and 9..............................dis 55 %
" Grape, Nos. 10 to 14..............................dis 55 %
Galvanized Telegraph, Nos. 7 to 9..............................₩ ℔ 9c
" " Nos. 10 and 11..............................₩ ℔ 10c
" " No. 12..............................₩ ℔ 10½c
Fence Staples..............................₩ ℔ 7½@ 7¾c
" Staples, Galvanized..............................₩ ℔ 8½ @ 8¾c
Stubs Steel Wire..............................$7.00 to $
Japanned Barb Fence..............................₩ ℔ 9c
Galvanized "..............................₩ ℔ 10c
Steel Music Wire, Nos. 12 to 27..............................₩ ℔ $1.25 net
Turner & Seymour Mfg. Co., Picture Wire..dis 80&20 %
Judd's Picture Wire..............................dis 80&20 %
Clothes Line Wire, Galvanized..............................₩ coil 25@40c net
Wire Cloth, green and drab..............................₩ sq. ft, 3 c net

Wrenches.
American Adjustable..............................dis 45 %
Baxter's Adjustable "S,"....list Jan., 1880, dis 15&10 %
" Diagonal..............................dis 15&10 %
Coes' Genuine..............................dis 50 %
" "Mechanics"..............................dis 50&10 %
" Pattern, Malleable..............................dis 70&10 %
Girard Standard..............................dis 50&10 %
Girard Agl..............................60&10 %
Bemis & Call's Patent Combination..............................dis 20 %
" " Merrick's Pattern..............................dis 35 %
" " Briggs' Pattern..............................dis 25 %
" " Cylinder or Gas Pipe..............................dis 40 %
Van Wagoner & Williams' Basin..............................per doz $4.50
Aiken Pocket (Bright)..............................$6.00, dis 60&10 %
The Favorite Pocket (Bright)..............................per doz $8, dis 60 %
Webster's Pat. Combination..............................dis 25 %

Wringers.

		Per doz
Universal, XX	No. 2½	$6—.00
" "	No. 2	63.00
" "	No. 1½	71.00
" "	No. 1	93.00
" "	No. 8.......each,	12 00
" "	No. 12	20.00
" "	No. 18	25.00
" "	No. 22	32.00
Peerless, No. 0, no Cogs		51.00
"	No. 1, "	54.00
"	No. 2½, with Cogs	60.00
"	No. 2, "	64.00
"	No. 3, "	71.00
"	No. 4, "	80.00
Unique, No. 0		52.00
"	No. 1	54.00
Novelty, No. 10, with Cog Wheels		00.00
"	No. 2, "	3 00
Excelsior, No. A, with Folding Bench		75 00
"	No. E, for Set Tubs	69.00

(dis 25 %)

Steel.

WOLFF, KAHN & CO.,

MANUFACTURERS OF

Steel Wire

For All Purposes.

Special Finest CAST STEEL WIRE,

MARKET STEEL WIRE, PRIME COPPERED SPRING WIRE, TEMPERED AND UNTEMPERED STEEL WIRES, IN LONG LENGTHS, FOR CRINOLINE, CORSET, LOCK AND BRUSH MAKERS, AND ALL SPECIAL PURPOSES.

ALL KINDS OF FURNITURE SPRINGS.

IMPORTERS OF

IRON, STEEL, & RAILS

OF EVERY DESCRIPTION.

WIRE RODS. PLAIN AND GALVANIZED WIRES, &c.,
GUN BARRELS, MOULDS, AND ORDNANCE.

Shipments in bond from American Ports and direct from Europe to all parts of the World.

EXPORTERS AND GENERAL MERCHANTS.

WORKS, PEEKSKILL, N. Y.

Direct all communications to

OFFICE & WAREHOUSE, 46 Cliff St., New York.

MILLER, METCALF & PARKIN,

Pittsburgh, Pa.,

Manufacturers of

CRESCENT STEEL,

In Bars, Sheets, Cold-Rolled Strips, &c.

Polished, Compressed Drill Rods and Wire,

Warranted equal to any imported in *quality, finish and accuracy.*

Also Common Grades.

Established 1810.

J. & RILEY CARR,

SHEFFIELD, ENGLAND.

Manufacturers of the "Celebrated

"DOG BRAND" FILES.

Also of Superior

STEEL

For Drills, Cold Chisels, Tools, Taps, Dies, &c.

COLD ROLLED TEEL for Clock Springs, Corsets, &c.
SHEET CAST STEEL for Springs, Saws, Welding and Stamping Cold, &c.
GERMAN, MACHINERY, ENGLISH AND SWEDES SPRING STEEL,
And all other descriptions for machinists and agricultural purposes.

Warehouse, 30 Gold Street, New York.

Near John Street. HENRY MOORE, Agent.

S. & C. WARDLOW,

Sheffield, England,

Manufacturers of the Celebrated

Cast and Double Shear

STEEL.

In Bars, Sheets and Coils, for fine Pen and Pocket Cutlery, Table Knives, Mining Tools, Dies, Files, Clock and other Springs, and Tools of every variety.

Warehouse, 95 John Street, New York.

WILLIAM BROWN, Representative.

Cleveland Rolling Mill Co.,

Manufacturers of

BESSEMER STEEL

AND

Iron Rail and Fastenings,

SPRING STEEL

AND

WIRE OF ALL KINDS,

Tire, Axles and other Forgings,

Boiler Plate, Galvanized and Black Sheet Iron, Corrugated Roofing and Siding of Siemens-Martin, Bessemer Steel and Iron.

CLEVELAND, OHIO.

Western Agency,
91 Lake Street, Chicago.
N. D. PRATT, Agent.

New England Agency,
239 Franklin Street, Boston.
JOHN WALES & CO., Agents.

THE MIDVALE STEEL CO.,

NICETOWN, PHILADELPHIA.

Best Warranted Cast Steel for Machinists' Tools,

Taps, Dies, Punches, Shear Blades, Chipping Chisels and Granite Rock Drills,

Extra Mild Center Steel, special for Taps,

ALSO,

MACHINERY AND CAST SPRING STEEL, HEAVY AND LIGHT FORGINGS.

Warehouse, No. 12 North 5th St., Philadelphia.

Address *A. M. F. Watson,* General Sales Agent.

STEEL Gautier Steel.

See Page 3.

Steel.

NEWARK STEEL WORKS.

BENJAMIN ATHA & CO.,

Manufacturers of

BEST REFINED CAST STEEL

And grades of Steel specially adapted for Lathe Tools, Chisels and Taps and Dies.

Warranted most superior for TOOLS AND GRANITE ROCK DRILLS

A full assortment of this universally approved OLD BRAND and other Steels for sale by

EDWARD FRITH & SON, Agents,

No. 241 Pearl St., New York.

LABELLE STEEL WORKS.

SMITH, SUTTON & CO.,

MANUFACTURERS OF ALL KINDS OF

STEEL.

Also Springs, Axles, Rake Teeth, &c.

OFFICE & WORKS, Ridge, Lighthill & Belmont Sts., & Ohio River, Allegheny.

Post Office Address, Pittsburgh, Pa.

Represented at Boston by WETHERELL BROS., 31 Oliver St.; at Milwaukee by JOHN PRITZLAFF, 43 to 49 West Water St.; at Chicago by S. D. KIMBARK, 80 to 84 Michigan Ave.

ALBANY & RENSSELAER IRON & STEEL CO.,

Troy, N. Y.,

Office in New York City, 56 Broadway,

MANUFACTURERS OF

BESSEMER STEEL RAILS,

Machinery Steel, Merchant and Ship Iron.

HORSE SHOES.

SAM'L G. B. COOK & CO., Agents for Southern States,

67 and 69 German Street, Baltimore, Md.

FRANCIS HOBSON & SON

97 John Street, NEW YORK.

Sole Manufact'rs of **"CHOICE"** Extra Cast Steel.

Manufacturers of all Descriptions of Steel.

Manufacturers of Every Kind of Steel Wire.

Don Works, Sheffield, England.

CHAS. HUGILL, Agent.

THE

STEEL COMPANY OF SCOTLAND, LIMITED,

(SIEMENS' PROCESS,)

— MANUFACTURERS OF

Steel Rails,
Steel Blooms for Rails,
Steel Blooms for Wire,
Steel Wire Rods,
Steel Locomotive Fire Boxes,
Steel Ship Plates.
Steel Boiler Plates,
Steel Angles,
Steel Forgings,
Steel Castings.

JAMES LEE & CO.,

Resident Agents for the United States,

72 Pine Street, New York.

GEO. SANDERSON & CO.,

MANUFACTURERS AND

Importers of STEEL,

Removed to 30 Gold Street, New York.

Particular attention is paid to quality and temper for FILES, SAWS, EDGE TOOLS, TABLE and POCKET CUTLERY, TOOLS, TAPS and DIES; also for COLD ROLLED STEEL for CLOCK SPRINGS, CORSET CLASPS, &c.

A Large Assorted Stock of JOHN ROTHERY'S FILES always on hand.

CHROME STEEL WORKS,

MANUFACTURERS OF

CHROME CAST STEEL,

WARRANTED SUPERIOR TO ANY STEEL IN THE MARKET—EITHER ENGLISH OR AMERICAN —FOR EVERY PURPOSE.

Principal Office and Works, Kent Ave. and Keep St., Brooklyn, E. D., N. Y.

S. H. KOHN,
Proprietor.

C. P. HAUGHIAN,
Superintendent.

Chicago Branch,
MALCOLM McDOWELL, Manager.
121 Lake Street.

Cincinnati Branch,
GEORGE KINSEY, Manager,
123 Central Avenue.

JOLIET STEEL COMPANY,

MANUFACTURERS OF

Steel Rails,

ALL WEIGHTS.

The Company Warrant its Rails equal in quality to any manufactured in the United States.

ALEX. J. LEITH, President.
W. R. STIRLING, Treasurer
C. E. SARGEANT, Secretary

CHICAGO.

H. S. SMITH, General Sup't.
JOLIET.

Office, Rooms D and E, Honore Building.

Works, Joliet, Ill.

Steel.

R. MUSHET'S

Special Steel

FOR

LATHES, PLANERS, &c.

Turns out at least **double work** by increased speed and feed, **and cuts harder metals** than any other Steel. Neither hardening nor tempering required.

Sole Makers,

SAMUEL OSBORN & CO.,

Sheffield, England.

Represented in the United States by

B. M. JONES & CO.,

Nos. 11 & 13 Oliver Street, **BOSTON.**

STAR ★ BRAND

BLACK LEAD STOPPERS,

FOR

Bessemer Converters and Siemens-Martin Furnace Ladles.

All the regular sizes in stock, with Nozzles to fit each size. Special sizes or shapes made to order from sample or drawing.

Black Lead Crucibles, all kinds and sizes.

TAUNTON CRUCIBLE COMPANY,

Taunton, Mass.

W. T. MACFARLANE, Treasurer and Agent.

NAYLOR & CO.,

99 John St., New York. 6 Oliver St., Boston, Mass.

W. R. HART, Agent,

208 S. Fourth St., Philadelphia, Pa.

THOS. J. HOYT, Agent,

709 North Second St., St. Louis, Mo.

MANUFACTURERS OF

STEEL COMPRESSED SHAFTING,

"Benzon" Homogeneous Plates

For Boilers, Fire-boxes, &c.

Axles, Crank Pins, Spring Steel,

And all other kinds of

Martin-Siemens Steel and Iron

For Railroad purposes, &c.

IMPORTERS OF

IRON AND STEEL RAILS,

SWEDISH IRON,

Tin and Terne Plates and Metals.

H. & A. CARTER,

1a Laurence Pountney Hill,

Cannon Street, London, E. C.,

Iron and Steel Merchants,

Exporters of Iron and Steel Rails, Blooms, Spiegeleisen, Pig Iron, Crop Ends, Old Rails and Scrap; Iron Ore, &c. Sole agents for the sale of the Vona Dulce (Somorrostro) Iron Ore from the Magdalena Mine. Shipping Port: Bilbao.

Analysis of "Magdalena" Ore.

Silica	4.05
Peroxide of Iron	84.60
Oxide of Manganese	1.65
Alumina	1.24
Lime	0.33
Magnesia	traces
Phosphoric Acid	0.04
Sulphuric Acid	0.42
Combined Water	5.97
Moisture	2.43
	100.43
Metallic Iron	59.22

The Sulphuric Acid exists as Sulphate of Lime, and is, in my opinion, not detrimental.

Signed, E. D. RILEY, F. C. S.

Cable address:

HENRY CARTER, *London.*

Emery, Grindstones, &c.

Walter R. Wood,

GRINDSTONES,

Berea, O., Nova Scotia, & other brands

283 and 285 Front Street, New York.

GEO. CHASE,

The largest manufacturers in the world of

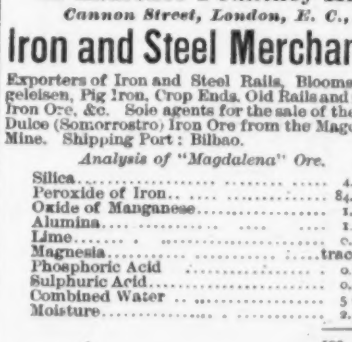
OIL 

STONE

Of all description.

107th Street and Harlem River.

Send for Illustrated Price List. NEW YORK.



McDERMOTT & BEREA STONE CO.,

Manufacture

GRINDSTONES.

Cleveland, Ohio.

LOMBARD & CO.,

Importers and Dealers in

GRINDSTONES,

Cor. Lewis Wharf & Atlantic Ave., Boston.

Stones for Machinists, Carpenters, Farmers and Glass Cutters constantly on hand and cut to order.

ASHLAND EMERY CO.

CHARLES ALDEN, MANAGER.

Importers and Manufacturers of PURE

TURKISH EMERY

A. A. IRVINE & CO., Agents,

14 MURRAY ST., NEW YORK.

Send for quotations and samples.

Steel.

NORTH CHICAGO ROLLING MILL CO.

ESTABLISHED 1857. CAPITAL, $3,000,000. INCORPORATED 1869.

Works at Chicago, Ill., and Milwaukee, Wis.

MANUFACTURERS OF

MERCHANT BAR, FISH PLATES, PIG METAL,

IRON RAILS & BESSEMER STEEL RAILS.

Present Annual Capacity of these Works.

Fish Plates	13,000 tons
Merchant Bar	40,000 "
Pig Metal	140,000 "
Iron Rails	110,000 "
Steel Rails	100,000 "
Total Capacity per year	403,000 "

OFFICES:
17 Metropolitan Block, Chicago, Ill.
37 Mitchell Block, Milwaukee, Wis.

O. W. POTTER, President, CHICAGO.
N. THAYER, Jr., Vice-President, Boston.
S. CLEMENT, Treasurer, MILWAUKEE.
R. C. HANNAH, Secretary, CHICAGO.

M. K. Moorhead. G. F. McCleane. W. J. Moorhead.

SOHO IRON MILLS.

MOORHEAD & CO.,

MANUFACTURERS OF

GALVANIZED SHEET IRON,

Juniata, Charcoal and Common.

Sheet & Plate Iron,

And Special Sizes for Sap Pans.

PITTSBURGH, - - - - - PENN.

FIRST QUALITY. SECOND QUALITY

SOHO CHB TRADE MARK

NOTICE.

Hereafter our **GALVANIZED SHEET IRON** will be branded as per cuts in margin. We have adopted these

TRADE MARKS

to protect ourselves and the trade against imitations of our iron, as was the case under our old brands.

TRADE PLANET MARK

MOORHEAD & COMPANY NSM SOHO MILLS PITTSBURGH.

MOORHEAD & CO.

January 1, 1881.

THIRD QUALITY as heretofore.

REFINED.

ELBA IRON & BOLT CO., Limited.

MANUFACTURERS OF

MERCHANT BAR IRON,

SKELP IRON, SPLICE BARS,

Railway Track Bolts, Car, Bridge and Machinery Bolts, Nuts, &c.

We invite the attention of RAILROAD MEN especially, to our make of SPLICE BARS and Track Bolts. Using the best brands of REFINED IRON, and paying close attention to the finish of our manufactures, we are enabled to offer our patrons BOLTS, NUTS, SPLICE BARS, &c., of excellent quality.

Our works have been enlarged within a few years; all orders are now executed with promptness; all our work guaranteed.

SEND FOR PRICE LISTS AND INFORMATION TO

ELBA IRON & BOLT CO., Limited,

PITTSBURGH, PA.

WILLIAM. McNIECE,
SAW MANUFACTURER.
515 CHERRY ST. PHILA. PA.

PHILADELPHIA SCREW CO., Limited,

Twelfth and Buttonwood Streets, PHILADELPHIA.

TRADE MARK BEST CHARCOAL IRON WOOD SCREWS

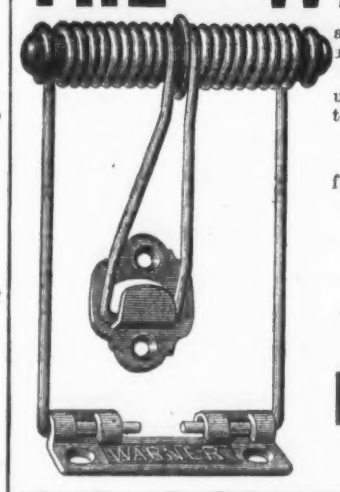
Manufacturers of

IRON & BRASS WOOD SCREWS.

Quality, finish and tests as to strength guaranteed equal to any in the market.

With improved facilities and largely increased capacity for production, we can fill orders promptly, and invite inquiries for discounts. A full line in stock.

THE "WARNER" DOOR SPRINGS



are the most simple, most effective and most convenient ever introduced, and the immense sale we are having shows their great popularity and superiority.

There never was a Spring made that is so durable, so complete in its action, operating with a uniform pressure, holding the door **tight** when **closed,** and allowing it to open without increasing the pressure at any point.

When the door is opened about 130 degrees of a circle, it will press and hold it open.

The Spring is easily **unhooked** and **rehooked**—in an instant—from the **door** and also from the **jamb,** without removing a **screw** or **pin.**

This is a Convenience Possessed by no other Spring in the Market.

We are making this season three sizes, viz:
No. 1 For Screen or Light Storm Doors.
No. 2 For Medium Doors.
No. 3 For Heavy Doors.
They are for sale by most of the prominent jobbers of the United States and Canada.
Correspondence solicited.

FREDERIC BARTLETT,

FREEPORT, ILLINOIS.

ESTABLISHED IN 1859.

THE IRONMONGER AND METAL TRADES ADVERTISER

PUBLISHED EVERY SATURDAY.

THE OLDEST AND CHIEF REPRESENTATIVE OF THE IRON, HARDWARE AND METAL TRADES.

OFFICE: 44a CANNON STREET, LONDON, E. C.

ADVERTISEMENTS AND SUBSCRIPTIONS ARE RECEIVED AT THE VARIOUS OFFICES OF "THE IRON AGE," NAMELY:

NEW YORK OFFICE: DAVID WILLIAMS, Publisher of *The Iron Age*, 83 Reade street.

PITTSBURGH OFFICE: 77 Fourth Avenue—JOS. D. WEEKS, Manager and Associate Editor.

PHILADELPHIA OFFICE: 220 South Fourth Street—THOMAS HOBSON Manager.

CINCINNATI OFFICE: Builders' Exchange—T. T. MOORE Manager.

SOUTHERN OFFICE: Cor. Eighth and Market Streets, Chattanooga, Tenn.—S. B. LOWE, Manager.

SPECIAL FEATURES.

Notes of Novelties.—This is a department of the journal always watched with interest by the trade, as it contains an account, from week to week, of the novelties which manufacturers and inventors are introducing to the notice of the trade. These articles are freely illustrated.

Special Correspondents.—The *Ironmonger* has a deserved reputation for its special correspondence from all the principal Continental, British and manufacturing centers. The writers are gentlemen holding important positions in the districts with which they are connected, and possess facilities for acquiring information specially suited for the columns of the *Ironmonger*. *The Week, Legal News, Trade Notes, Bankruptcies, Foreign Notes, Colonial Jottings, Merchants' Circulars, &c.*, are each departments of the journal, containing a digest of all matters of direct interest to the Iron, Hardware and Metal Trades. In addition to the above, there is a carefully classified list of Patents, together with Editorial Notes, French Belgian and other Special Correspondence.

SUBSCRIPTIONS

to the *Ironmonger and Metal Trades' Advertiser*, with which is sent every fourth week the Foreign Supplement (see below), may commence from any date, but are not received for less than a year complete. The rate is $5 per annum, inclusive of postage to any part of the world outside Great Britain. To every subscriber is presented, free, in the course of his year, a handsome and useful ***Ironmongers' Diary and Text Book,*** a work sold to non-subscribers at 75 cents.

ADVERTISEMENTS

are inserted in the *Ironmonger and Metal Trades Advertiser* at the subjoined rates, from which no variation can be made on any ground whatever.

Size of Page—Nine Inches Deep by Six Inches Wide.

One Advertisement of every Series of 13 Monthly, 27 Fortnightly, or 53 Weekly, will be inserted in the Ironmongers' Diary and Text Book, published toward the end of each year, and presented to every Subscriber.

	53 INSERTIONS, each net.	27 INSERTIONS, each net.	13 INSERTIONS, each net.	7 INSERTIONS, each net.	3 INSERTIONS, each net.	1 INSERTION. net.
	Gold.	Gold.	Gold.	Gold.	Gold.	Gold.
One page	$20.00	$22.50	$25.00	$30.00	$35.00	$50.00
Two-thirds page	15.00	16.90	18.75	22.50	26.25	37.50
Half page	11.00	12.40	13.75	16.50	19.25	27.50
One-third page	8.00	9.00	10.00	12.00	14.00	20.00
Quarter page	6.40	7.25	8.00	9.60	11.20	16.00
One-sixth page	4.50	5.10	5.65	6.75	7.75	11.30
One-eighth page	3.60	4.10	4.50	5.40	6.25	9.00
One-sixteenth page	2.00	2.25	2.50	3.00	3.50	5.00

SPECIAL ISSUES.

In the spring and autumn of each year there is published a Special Issue, the circulation of which is not less than **Twelve Thousand (12,000)** copies.

THE IRONMONGERS' DIARY AND TEXT BOOK.

This is an annual, **presented free to every subscriber to the IRONMONGER AND METAL TRADES' ADVERTISER.** It contains a large number of ruled skeleton pages for diary and other entries, and in addition much useful reference information, varied from year to year. It is handsomely bound in cloth, gilt; and as copies are used in thousands of establishments for a whole year, it is obviously a medium of exceptional value for advertisements. Sold to non-subscribers at 75 cents.

THE FOREIGN SUPPLEMENT

is published every fourth week in connection with the extensive and world-wide circulation of the *Ironmonger* itself. The dates of its publication for the next twelve months will be as follows:

APRIL 2 and 30, MAY 28, JUNE 25, JULY 23, AUGUST 20, SEPTEMBER 17, OCTOBER 8, NOVEMBER 6, DECEMBER 3 and 31, JANUARY 28, FEBRUARY 25, 1882.

This Supplement is published in

FIVE LEADING COMMERCIAL LANGUAGES

of the world, including English, and is sent to all the countries where they are spoken, thus placing the contents of the *Ironmonger* not only within reach out in the native language of eighty millions of *German*, forty-two millions of *French*, twenty-eight millions of *Italian*, and fifty-one millions of *Spanish* speaking people; or, in all, over two hundred millions of inhabitants in the principal nations where the best purchasers of manufactured goods are to be found.

Advertisements are inserted in *any* language at the following

MODERATE TARIFF.

Size of Page—13½ Inches Deep by 9½ Inches Wide.

	13 INSERTIONS, each net.	7 INSERTIONS, each net.	3 INSERTIONS, each net.
	Gold.	Gold.	Gold.
One page	$30.00	$33.75	$37.50
Two-thirds page	22.00	24.75	27.50
Half page	17.00	19.15	21.25
One-third page	12.50	14.10	15.65

	13 INSERTIONS, each net.	7 INSERTIONS, each net.	INSERTIONS each net.
	Gold.	Gold.	Gold.
Quarter page	$10.00	$11.25	$12.50
One-sixth page	7.50	8.45	9.40
One-eighth page	6.20	7.00	7.75
One-sixteenth page	3.20	3.40	4.20

Advertisers will do well to use Illustrations freely. Where economy of space is an object, a left page illustrated and described in one language can be suitably described in four or more languages on the opposite or right page without illustrating.

THE WHOLE FOREIGN HARDWARE TRADE,

so far as our experience of twenty years is concerned, will be covered by THE FOREIGN SUPPLEMENT at least twice a year. Thus a Price List or Advertisement inserted in the *Ironmonger* and FOREIGN SUPPLEMENT is a strikingly powerful and most efficient way of publicity not to be compared with any of the other ordinary channels of communication.

B. KREISCHER & SONS,

FIRE BRICK.

BEST AND CHEAPEST.

Established 1845.

Office, foot of Houston Street, East River, NEW YORK.

NEWTON & CO.,

ALBANY, N. Y., Manufacturers of

FIRE BRICK

Stove Linings,

Range and Heater Linings

Cylinder Brick, &c., &c.

M. D. Valentine & Bro

Manufacturers of

FIRE BRICK

And Furnace Blocks

DRAIN PIPE & LAND TILE.

Woodbridge, - - - N. J.

BORGNER & O'BRIEN,

Manufacturers

FIRE BRICK

AND

Edge Pressed Furnace Blocks,

CLAY RETORTS, TILES, &c.,

Twenty-third Street,

Above Race, *PHILADELPHIA.*

Twenty years' practical Experience.

BROOKLYN

Clay Retort and Fire Brick Works,

(EDWARD D. WHITE & CO.)

Manufacturers of **Clay Retorts, Fire Brick, Gas House and other Tile.**

VAN DYKE, EL ZABETH, RICHARDS & PARTITION STS.

Office, 88 Van Dyke St., Brooklyn, N. Y.

WATSON FIRE BRICK CO.,

ESTABLISHED 1836.

Successors to JOHN R. WATSON, Perth Amboy, New Jersey.

Manufacturers of

FIRE BRICK,

FOR ROLLING MILLS, BLAST FURNACES, FOUNDRIES, GAS WORKS, LIME KILNS, TANNERIES, BOILER and GRATE SETTING, GLASS WORKS, &c.

Fire Clays, Fire Sand, and Kaolin for Sale.

HENRY MAURER,

Proprietor of the

Excelsior Fire Brick & Clay Retort Works,

Manufacturer of **FIRE BRICK, HOLLOW BRICK AND CLAY RETORTS.**

WORKS: PERTH AMBOY, NEW JERSEY.

Office & Depot, **418 to 422 East 23d St., N. Y.**

TROY FIRE BRICK WORKS,

Troy, N. Y.,

JAMES OSTRANDER & SON,

ESTABLISHED 1848,

Manufacturers of

FIRE BRICK,

Tuyeres, Tiles, Blast Furnace Blocks, &c. Miners and Dealers in Woodbridge Fire Clay and Sand, and Staten Island Kaolin.

Established 1864.

GARDNER BROTHERS,

Manufacturers of

STANDARD SAVAGE FIRE BRICK, TILE & FURNACE BLOCKS,

OF ALL SHAPES AND SIZES.

Clay Gas Retorts and Retort Settings, and Miners and Shippers of Fire Clay.

OFFICE: 116 Smithfield St., Pittsburgh, Pa.
WORKS: Mt. Savage Junction, Md., and Lockport, Pa.

HALL & SONS,

FIRE BRICK,

Buffalo, N. Y.

MILLER'S BRICK PRESSES

(Established 1844).

FIRE and RED BRICK,

And Brickmake s' Tools in General.

SAML. P. MILLER & SON,

309 South 5th St., Philadelphia.

The Morris Sash Lock Mfg. Co.

Manufacturers of

The Morris Sash Lock,
Pat. Combined Sash Lift & Lock,
Pat. Self-Locking Shutter Bar,

And specialties in **Builders' Hardware.**

214 and 216 ELM STREET, CINCINNATI, OHIO, U. S. A

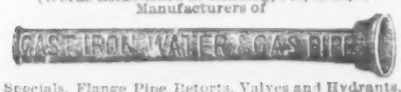
WILLIAM H. AINEY, Chairman. PETER D. WANNER, Sec. and Treas.

Mellert Foundry & Machine Co.,

Limited.

(Works Established at Reading, Pa., in 1848)

Manufacturers of



Specials, Flange Pipe Retorts, Valves and Hydrants, Lamp Posts, &c. **The Improved Canadian Turbine Water Wheel.** Machinery and Castings for Furnaces, Rolling Mills, Grist and Saw Mills, Mining Pumps, Hoists, &c. Columns, Brackets, Iron Railings, &c.

ARNOLD MELLERT, Supt., Reading, Pa.

HENRY DISSTON & SONS,

KEYSTONE SAW, TOOL, STEEL & FILE WORKS,

Front and Laurel Streets, PHILADELPHIA

DISSTON'S SAMSON TREE PLANTER AND POST HOLE DIGGER,

Fig. 1.

Patented May 29, 1870.

Price, - - $37.50 per dozen.

No Farmer, Nurseryman, Railroad or Telegraph Company

SHOULD BE WITHOUT ONE.

NO BACK-ACHE.
NO KNEE-WORK.
NO CLOGGING.

This tool has been thoroughly tested, and has given the greatest satisfaction to all who have tried it. The principle on which it works makes it self-cleaning and prevents adhesion in sticky soil; therefore it always works free and easy. It is far superior to all plungers, augers and boring machines, as it works well in stony, sandy, or clay soils; quicksand under water is as easily removed as though no water existed.

Fig. 2.

DIRECTIONS.

Plunge the Digger into the ground, as shown in cut, Fig. 1, and when the soil is loosened pull out the lever with one hand, as shown in cut, Fig. 2, which will press the dirt between the blades; then draw the Digger from the hole, keeping hold of the lever with one hand and the handle with the other. When the Digger is clear of the hole, you can deposit the load anywhere within reach by simply pressing down the lever, which will open the blades, and the dirt will fall from between them. The Digger is then ready for another plunge. The steel blades are nine inches long, and the whole tool five feet long. *For Sale at Hardware and Agricultural Stores.*

HENRY DISSTON & SONS.

CHAMPION ONE-MAN SAW

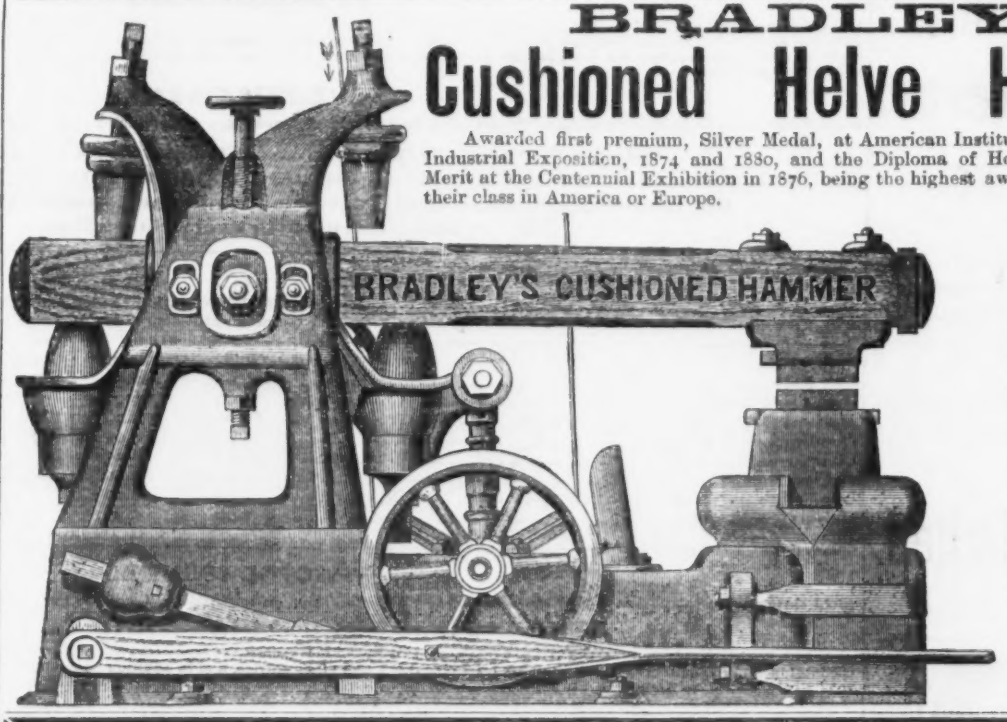
WITH PATENT ADJUSTABLE ATTACHMENT. The only Saw that can be adjusted for either a One-Man or a Two-Man Saw. We make the following lengths, 3½, 4, 4½, 5 feet. Send for sample.

WHEELER, MADDEN & CLEMSON MFG. CO., Middletown, N. Y.

BRADLEY'S

Cushioned Helve Hammer.

Awarded first premium, Silver Medal, at American Institute Fair, 1873, Cincinnati Industrial Exposition, 1874 and 1880, and the Diploma of Honor and Grand Medal of Merit at the Centennial Exhibition in 1876, being the highest award given any goods of their class in America or Europe.



IT HAS MORE GOOD POINTS,
DOES MORE AND BETTER WORK,
TAKES LESS POWER,
COSTS LESS FOR REPAIRS,
THAN ANY HAMMER IN THE WORLD.

Guaranteed as Represented.

BRADLEY & COMPANY,

Established 1832. Syracuse, N. Y.

AMERICAN BOLT CO., Lowell, Mass.,

MANUFACTURERS OF

Bolts, Nuts, Washers, Chain Links, Car Bolts, Bridge Bolts, Lag Screws, &c.

IRON, BRASS AND GERMAN SILVER

FRENCH NAILS, ESCUTCHEON PINS, SMALL RIVETS & SCREWS,

And Specialties in this line made to order by

BLAKE & JOHNSON,

WATERBURY, CONN.

To the Trade —This new tool is sold by Hardware and Agricultural dealers generally, being retailed to Farmers, Planters, Miners, Mechanics and all who want a good, convenient and cheap tool. It comprises an *Anvil* with face 2½ x 8 inches, chill hardened and polished; a parallel *Vise* with 4-inch steel-faced jaws that open 7 inches, and an *Adjustable Vise* that will hold articles whose sides are not parallel, as shown in cut. For circulars and discounts, address

CHENEY ANVIL & VISE CO., Detroit, Mich.

Canada patent, date Jan. 8, 1881, on above, for sale.

GEO. M. EDDY & CO.

Manufacturers of

Measuring Tapes

Of Cotton, Linen & Steel.

FOR ALL PURPOSES.

351 to 353 Classon Ave., Brooklyn, N. Y.

John T. Lewis & Bros.

No. 231 South Front St., PHILADELPHIA.

JOHN T. LEWIS & BROS. WARRANTED PURE WHITE LEAD. PHILADA.

TRADE MARK.

MANUFACTURERS OF

Pure White Lead, Red Lead, Litharge, Orange Mineral, Linseed Oil,

AND PAINTERS' COLORS.

Brooklyn White Lead Co.

TRADE MARK

White Lead, Red Lead & Litharge.

No. 182 Front Street, NEW YORK,

JOHN JEWETT & SONS,

Manufacturers of the well-known brand of

WHITE LEAD.

JEWETT & SONS, PERFECTLY PURE WHITE LEAD.

TRADE MARK

ALSO MANUFACTURERS OF

LINSEED OIL.

182 Front Street, NEW YORK.

ATLANTIC WHITE LEAD. PURE. WARRANTED ROBERT COLGATE & CO.

TRADE MARK.

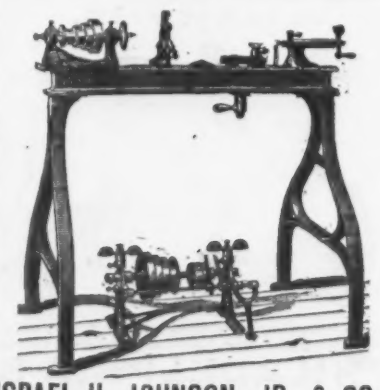
The Atlantic White Lead and Linseed Oil Co.,

MANUFACTURERS OF

White Lead (Atlantic), Red Lead, Litharge & Linseed Oil.

ROBERT COLGATE & CO.,

287 Pearl Street, New York.



ISRAEL H. JOHNSON, JR. & CO.,

TOOL & MACHINE WORKS,

Manufacturers of Engine, Brass Finishers', Wood Turners', Amateurs' and Jewelers' **LATHES.** Slide Rest, Screw Machines, Turret Heads, Screw Presses, Screw Clamps, Lathe Carriers, &c.

440 N. 12th St., above Noble, Philadelphia, Pa.

Israel H. Johnson, Jr., *Joshua R. Johnson, Jr.*

THOMAS MORTON,

Manufacturer of

CABLE, COPPER, IRON AND STEEL SASH CHAINS, for suspending window sashes. Also, Copper Champion Chains, with patent attachments, for same purpose. Agents wanted in the principal cities in the United States. Apply at

65 Elizabeth Street, New York.

PHILADELPHIA.

(Corrected Weekly by Lloyd, Supplee & Walton.)

Terms, 30 days. For 60 or 90 days, interest added at 10 per cent. per annum.

Anvils.
Peter Wrights, ℔ ℔ ... 10½c
Over 250 lbs ... 11c
Eagle (American) ... 10c ℔ ℔—dis 20 %

Apple Parers.
Keystone Centennial, 1875 ... $4.25
" 1877 ... 5.00
Reading No. 72 ... 5.00
" No. 74 ... 6.00
" No. 75 ... 7.00
" No. 78 ... 7.50
Rotary Peach Parers ... 13.50
Lots of 10 to 25 dozen special prices.

Axes.
Hunt's Kentucky and Yankee ... per doz $11.00
Mann's Red Warrior ... " 11.00
Richland Chief ... " 10.00
Beveled Axes ... add 50c " net
Double Bit Axes ... net " 22.00

Augers and Auger Bits.—New List January 1.
Bates' Nut Augers ... dis 40 %
Cook's Augers ... dis 40&10 %
Watrous' Ship Augers ... dis 15 %
Benjamin Pierce Auger Bits ... dis 35 %
Griswold Auger Bits ... dis 40 %
Cook's " ... dis 40&10 %
Jennings' " ... dis 10, 10&10 %
Bonney's Pat. Hol. Augers, list $48 ℔ doz..dis 25&10 %
Stearns' Pat. Hol. Augers, list $48 ℔ doz....dis 20&10

Balances.
Light and Common ... dis 15&10 %

Bells.
Bevin Bros. Mfg. Co. Light Hand Bells ... dis 60&10 %
Swiss Pattern Hand Bells ... low list dis 40&10 %
Connell's Door Bells ... dis 35 %
Gt. Western & Kentucky Cow, new list ... dis 50 %

Bolt and Rivet Clippers.
Chambers' No. 1. for ⅜ bolt ... each, $7.50 }
" No. 2, " ½ " ... " 9.00 } dis 15 %
" No. 3. " ⅝ " ... " 12.00 }

Boring Machines.
Upright, without Augers ... List 5.50 } dis 40 %
Angular, without Augers ... " 6.75 }

Bolts.—Eastern Carriage Bolts ... dis 75&10 %
Philadelphia " ... new list dis 60&10 %
Stanley, Wrought Shutter ... dis 50&10 %

Braces.—Barber's ... dis 40 %
Backus ... dis 50 %
Spofford ... dis 50&5 %
American Ball ... dis 55 %

Butts.—Cast Fast Joint, Narrow ... dis 45&10 %
" " Broad ... dis 45&10 %
Cast Loose Joint, Narrow ... dis 55&10 %
" " Broad ... dis 55&10 %
" Acorn, Loose Pin ... dis 55&10 %
" " Jap'd ... dis 60&10 %
" Mayer's Loose Joint ... dis 60&10 %
Wrought Loose Pin ... dis 55&10 %
" Table Hinges and Back Flaps ... dis 50&10 %
" Narrow, Fast ... dis 50&10 %
" Loose Joint ... dis 55&10 %

Blind Butts.
Parker ... dis 75
Clark ... dis 75 %
Shepard ... dis 60, 10&10 %
Lull & Porter ... dis 66⅔&10 %
Huffer's ... dis 50 %

Chains.—German Halter and Coil, new list Oct. 22, 1879 ... dis 45 %
Galvanized Pump ... ℔ ℔ 10c net
Best Proof Coil Chain—English.
℔ ℔ ... 12 10 8¼ 7⅛ 7¼ 7 gold
3-16 ¼ 5-16 ⅜ 7-16 ½ in.

Chisels.—Socket Framing ... dis 65&10 %
Socket Firmer ... dis 65&10 %
Butcher's ... $5.00 to £ gold

Casters.—Bed (new list July 1, 1880,) ... dis 55&10 %
Plate ... dis 35&10 %

Coffee Mills.—Box and Side, new list Jan. 1, 1880 ... dis 35&10 %
Enterprise ... dis 25 %

Cutlery.—Walden Pocket ... new list net
Landers, Frary & Clark, J. Russell & Co., Lamson & Goodnow Mfg. Co. and Meriden Cutlery Co., Manufacturers' prices net.

Drawing Knives.
Hart Mfg. Co.'s ... dis 65&10 %
Adjustable Handle ... dis 15 %

Fry Pans.
Tinned ... dis 45 %
℔ doz. $3.50 4.00 4.50 5.00 5.50 6.50 7.50 9.00 10.00
No. ... 0 1 2 3 4 5 6 8
Burnished ... dis 60 %
℔ doz. $3.00 3.75 4.25 4.75 5.25 6.00 7.00 8.60 9.00
No. ... 0 1 2 3 4 5 6 7 8

Files.
Nicholson ... dis 40 %
Disston ... dis 40 %
Butcher ... $4.50 £
Spencer ... $4.50 @ 4.75 £
E. M. Boynton, new list ... 25 %

Fluting Machines.
Eagle—3½ in. roll ... each, $2.15 } dis 20 %
" —5½ in. roll ... " 2.85 }
Crown—4½ in. roll ... " 3.50 }
" —6 in. roll ... " 4.00 } dis 20 %
" —8 in. roll ... " 6.50 }
Geneva Fluter ... dis 25 %
Favorite com Fluter & Sad Iron ... ℔ doz $10.50 net

Hammers.
Yerkes & Plumb's, new list ... dis 30 %

Handles.
Boynton's Pat. Saw Handles ... 35c per pair net.

Hatchets.
Yerkes & Plumb, new list ... dis 30 %
Hunt ... dis 25%

Hinges.
Strap and T ... dis 50&10&10 %

Horse Nails.	Nos. 5	6	7	8	9	10
Ausable	30	27	25	24	23	22
" Pol'ed & P't'd and Blued and Pointed.	31	28	2	25	24	23
Globe ... New list.	28	25	23	22	21	20
Clinton		22	20	19	18	17
" Polished & Pointed		23	21	20	19	18

Porter, all sizes ... ℔ ℔ 15c. net
Discount on Ausable and Clinton, 30 %; Globe, 10%

Locks and Knobs.
Branford ... dis 45&2 %
Gaylord Cabinet ... dis 25&2 % cash
American Padlocks ... dis 40 &2 % cash
Scandinavian Padlocks ... dis 50 %
℔ doz. $5.00 5.50 6.50 7.50 8.50 10.00 12.50 } dis 60 %
No. ... 57 58 59 60 61 62 63 }
℔ doz ... $18.00 26.00 33.00 } dis 60 %
No. ... 64 65 66 }

Lanterns.
Nail City ... ℔ doz, $9.00 net
Square Candle and Oil ... ℔ doz
Tubular ... No. 0, $8.65; No. 1, $10.15 ℔ doz net
Globes, 35 cents extra per doz. net.

Lawn Mowers.—Pennsylvania ... } new list
Philadelphia ... } dis 25 %
Excelsior ... }

Lawn and Garden Pumps.
Holland Patent ... List $5.00 dis 10 %

Mattocks.
Long and Short Cutter ... new list ... 35 %
Pennsylvania Pattern ... per doz 35 %

Molasses Gates.
Enterprise Mfg. Co.'s Measuring Faucets ... dis 25 %
Stebbins' Gates ... dis 70&10 %
Lincoln's " ... dis 50&10 %
Landers, Frary & Clark's Petroleum ... dis 20&10 %
Brass Liquor Cocks, new list Jan. 1 1880 ... dis 40 %
Cork Lined " ... dis 70 %

Meat Cutters.—Penns'vania Meat Cutter. dis 40&10 %
Dixon's ... dis 35 %
Woodruff ... dis 35 %
Stowe ... dis 30 %
Hale's ... new list, dis 40, 10&2 cash
American ... dis 25 %
Stuffers ... dis 35 %
Enterprise Stuffers ... dis 25 %

Planes.—Ohio Tool Co ... dis 25 % }
Scioto ... dis 30 % }
Auburn ... dis 25 % } ... 20 %
New York Tool Co ... dis 30 % }
Bailey ... dis 20&10 %

Plane Irons.—Ohio Tool Co ... dis 20 %
Butcher's ... £, $5.50

Plumbs and Levels.
Stanley's Adjustable ... dis 65&10 %
" Non-Adjustable ... dis 65&10 %

Picks.—New list ... 35 %
Pumps.—Bickford ... $5.00, dis 10 %
Rules.—Stanley Boxwood ... dis 70&10 %
Stanley Ivory ... dis 60&10 %

Steelyards.—Hart's Pattern ... dis 30&10 %
℔ doz ... $14.50 17.75 21.00 26.50 31.00 35.50
Lbs ... 50 100 150 200 250 300
American Pattern ... dis 30&10 %
℔ doz ... $8.00 10.25 13.75 15.60 16.75 19.50
Lbs ... 50 100 150 200 250 300

Squares.
Steel and Iron ... dis 50 %; full case, dis 50&10 %
Try Squares, Stanley ... dis 50&10 %
Disston's Try Squares ... dis 40 %

Scythes.—Golden Clipper, Damascus Blade, Boxed and Sharpened ... ℔ doz $9.00 net
Clipper No. 10, Bronzed Blade, Boxed and Sharpened ... ℔ doz $8.50 net
Clipper No. 5, Painted Red, Boxed and Sharpened ... ℔ doz $8.00 net

Saws.—Disston's Hand, Panel and Rip ... dis 20 %
Disston's Circular ... dis 40 %
Cross-Cut No. 2, Plain Tooth ... dis 40%
" Patent Tooth ... dis 40%
" Champion Tooth ... dis 40%
Boynton's Lightning Cross Cut, new list ... dis 20 %
" One Man, all lengths, " ... dis 20 %
" Billet Webs, 30 inch, ... dis 25 %
" Lightning Buck Saws, cross bar ... dis 25 %
" " Hand, Panel and Rip ... dis 25 %

Shovels and Spades.
Rowland ... dis 40&10 %
Oliver Ames & Sons, new list ... dis 12½ %
Griffiths ... dis 40&10 %

Sad Irons.—4 to 10 lbs ... ℔ ℔ 3¾c
Mrs. Potts' Patent ... dis 35 %

Stone.—Arkansas Oil Stone ... ℔ ℔ $2.00 net
Washita Extra ... ℔ ℔ 27c net
" No. 1 ... " 18c
" No. 2 ... " 15c
" Slips ... " 36c
" Axe ... " 18c net
Turkey Oil Stone No. 1 ... ℔ ℔ $1.00 net
Hindostan Oil Stone No. 1 ... ℔ ℔ 6c }
" Axe Stone ... " 8c } dis 30 & 10 %
" Slips ... " 10c }

Screws.
Flat Head Iron ... dis 40 %
" Brass ... dis 40 %
Round Head Brass ... dis 30 %
" Iron ... dis 35 %

Spoons.
Plated ... dis 40, 5&5 %
German Silver ... dis 30, 10&5 %
Britannia, Boardman's ... dis 70 %
" Parker's ... dis 70 %
Tinned ... dis 10 %

Springs.—Torrey ... ℔ doz $2.10 10 %
Philadelphia ... 5 in., $5.00; 8 in., $7.00 ℔ doz. dis 25 %
Chatfield No. 1, $2.75; 2, $3.25; 3, $5.00 ℔ doz, dis 33⅓ %
Gem Coil No. 1, Large Jap'd ... ℔ doz $3.50 }
" No. 2, Medium Jap'd ... " 2.50 } 25&10 %
" No. 3, Small Jap'd ... " 2.00 }

Stocks and Dies ... dis 10&5 %

Stove Polish.—Gem ... ℔ gross, $4.50, dis 5 %
Dixon ... " 6.00, dis 10%
Onyx ... " $4.00 @ 4.25 net

Tacks ... dis 30&10 %
Shoe Nails—4-8, 9½c.; 3½-8, 10c ℔ ℔ ... 10 %
Double Pointed Tacks ... dis 40&5 %

Traps.
Genuine Oneida—Newhouse ... dis 30 %
Im. Oneida—Newhouse list, first qual ... dis 55 %

Vises.—Solid Box, Trenton new list ... dis 30 %

Wrenches.—Agricultural ... dis 60&10 %
Coes' Genuine ... dis 50 %
" " Mechanics' ... dis 50&10 %
" " Mall. Bar ... dis 70&10 %
Philada. Tool Co., Duplex ... dis

Wire.
Bright or Ann'd, No. 0 to 18 ... dis 52½ to 55 %
" " No. 19 to 26 ... dis 57½ to 60 %
" " No. 27 to 36 ... dis 62½ to 65 %
Coppered, 0 to 18 ... dis 42½ to 45 %
Tinned Broom Wire ... dis 45 to 47½ %
Galvanized No. 7 to 18 ... Market List, dis 32½ to 35 %

Wringers.
Peerless No. 2½ ...
" " 2 ...
Universal, No. 2½ ...
" " 2 ...
Novelty, No. 10 ...
" " 2 ...

PITTSBURGH.

Merchant Iron.

Terms.—Note or acceptance at 60 days, with current rate of exchange on New York, or a discount of 2 per cent. for cash, if remitted within 10 days from date of invoice.

Flat Bar.
1½ to 4 by ⅜ to 1 inch ... 2.5c
4¼ to 6 by ⅜ to 1 " ... 2.6c
1⅜ to 6 by 1⅛ to 1½ " ... 2.9c
1¼ and 1⅜ by ⅜ to ¾ " ... 2.6c
1 and 1⅛ by ⅜ to ¾ " ... 2.7c
⅝, ¾ and ⅞ by ⅜ to ⅝ inch ... 2.9c

Rounds and Squares.

1 to 1⅞	2.5c	⅝ to 9-16	2.7c
2 to 2⅝	2.7c	½ to 7-16	2.9c
2¾ to 3¼	3.0c	⅜	3.1c
3⅜ to 4	3.5c	5-16	3.3c
4¼ to 5	4.0c	¼	3.4c
¾ to ⅞	2.6c	3-16	5.9c

Oval Iron.

⅞ to 1½	2.9c	½	3.3c
⅝ to ¾	3.1c	⅜	3.7c

Half Oval and Half Round.

¾ to 1¼ inch	3.2c	½ inch	4.0c
⅝ to ⅞ "	3.7c	⅜ "	5.5c

Horse Shoe.
⅝ to 1⅛ by 5-16 to ⅝ inch ... 3.5c

Wagon Box Iron.
⅞ Inch, Nos. 13 and 14 ... 3.7c
⅞ " " 11 and 12 ... 3.5c
¾ " " 13 and 14 ... 4.0c
¾ " " 11 and 12 ... 3.8c
⅝ " " 13 and 14 ... 4.4c
⅝ " " 11 and 12 ... 4.1c

Heavy Bands.
2½ to 6 by ¼ and 5-16 inch ... 2.7c
1⅜ to 3¼ by ¼ and 5-16 " ... 2.7c
1 to 1⅜ by ¼ and 5-16 " ... 2.8c
¾ to ⅞ by ¼ and 5-16 " ... 3.0c
⅝ and ⅞ by ¼ and 5-16 " ... 3.5c

Light Bands.
1½ to 6 by ⅛ to 3-16 ... 3.0c
1½ to 6 by Nos. 11 and 12 ... 3.1c
1 to 1⅜ by ⅛ to 3-16 ... 3.1c
1 to 1⅜ by Nos. 11 and 12 ... 3.2c
⅞ and 13-16 by ⅛ to 3-16 ... 3.4c
⅞ and 13-16 by Nos. 11 and 12 ... 3.5c
¾ and 11-16 by ⅛ to 3-16 ... 3.7c
¾ and 11-16 by Nos. 11 and 12 ... 3.8c
⅝ and 9-16 by ⅛ to 3-16 ... 4.0c
⅝ and 9-16 by Nos. 11 and 12 ... 4.1c
½ inch by ⅛ and 3-16 ... 4.3c
½ inch by Nos. 11 and 12 ... 4.4c

Hoop Iron.
1¼ to 4, Nos. 13, 14 and 15 ... 3.3c
1¼ to 2, Nos. 16, 17 and 18 ... 3.4c
1¼ to 2, No. 19 ... 3.5c
1¼ to 2, No. 20 ... 3.6c
1¼ to 2, No. 21 ... 3.7c
1¼ to 2, No. 22 ... 3.8c
15-16, 1, and 1⅛, Nos. 13, 14 and 15 ... 3.5c
15-16, 1, and 1⅛, Nos. 16, 17 and 18 ... 3.6c
15-16, 1, and 1⅛, Nos. 19 and 20 ... 3.7c
15-16, 1, and 1⅛, No. 21 ... 3.8c
15-16, 1, and 1⅛, No. 22 ... 3.9c
⅞, Nos. 13, 14 and 15 ... 3.7c
⅞, Nos. 16, 17 and 18 ... 3.8c
⅞, Nos. 19 and 20 ... 3.9c
⅞, No. 21 ... 4.0c
⅞, No. 22 ... 4.1c
13-16, Nos. 13, 14 and 15 ... 3.9c
13-16, Nos. 16, 17 and 18 ... 4.0c
13-16, Nos. 19 and 20 ... 4.1c
13-16, No. 21 ... 4.2c
13-16, No. 22 ... 4.3c
¾, Nos. 13, 14 and 15 ... 4.0c
¾, Nos. 16, 17 and 18 ... 4.1c
¾, Nos. 19 and 20 ... 4.2c
¾, No. 21 ... 4.3c
¾, No. 22 ... 4.4c
11-16, Nos. 13, 14 and 15 ... 4.2c
11-16, Nos. 16, 17 and 18 ... 4.3c
11-16, Nos. 19 and 20 ... 4.1c
11-16, No. 21 ... 4.5c
11-16, No. 22 ... 4.6c
⅝, Nos. 13, 14 and 15 ... 4.4c
⅝, Nos. 16, 17 and 18 ... 4.5c
⅝, Nos. 19 and 20 ... 4.6c
⅝, No. 21 ... 4.7c
⅝, No. 22 ... 4.8c
⅝, No. 23 ... 4.9c
9-16, Nos. 13, 14 and 15 ... 4.6c
9-16, Nos. 16, 17 and 18 ... 4.7c
9-16, Nos. 19 and 20 ... 4.8c
9-16, No. 21 ... 4.9c
9-16, No. 22 ... 5.0c
9-16, No. 23 ... 5.1c
½ inch, Nos. 13, 14 and 15 ... 4.8c
½ " Nos. 16, 17 and 18 ... 4.9c
½ " Nos. 19 and 20 ... 5.1c
½ " No. 21 ... 5.2c
½ " No. 22 ... 5.3c
½ " No. 23 ... 5.4c

The prices under Hoop Iron do not apply to Cotton Ties.

1-10c per lb. extra will be charged for each gauge lighter than the lightest indicated.

1-10c per lb. extra will be charged for cutting Hoops to specified lengths.

Barrel Hoops.
1¼ to 2 in., cut to length.
9 to 11 lbs, per set of 6 hoops ... 3.5c
8 lbs. and less than 9 lbs. per set of 6 hoops ... 3.6c
Less than lbs. per set of 6 hoops ... 3.8c

Extras for Cutting to Length all Preceding Iron.
All Iron, including Tire ... 1.10c

Tank Iron.
No. 9 and heavier ... 3.3c
Plow Slabs ... 3.5c
" Wings ... 3.8c

Sheet Iron.

	Common.	Charcoal.	Juniata.
No. 10 to 14	3.5c	5.0c	6.5c
No. 15 to 17	3.8c	5.3c	6.8c
No. 18 to 21	4.1c	5.6c	7.1c
No. 22 to 24	4.3c	5.8c	7.3c
No. 25 & 26	4.5c	6.0c	7.5c
No. 27	4.7c	6.2c	7.7c
No. 28	5.1c	6.6c	8.1c

All sheets No. 18 and lighter, over 30 inches wide, not less than 2.10c extra.

Wood's Patent Planished Sheet.
1st quality (A) ... 11c | 2d quality (B) ... 10c
Galvanized C. H. B.—(Charcoal Hammered Blooms.)

Nos. 14 to 20	12c	No. 27	15c
Nos. 21 to 24	13c	No. 28	16c
Nos. 25 and 26	14c	No. 29	18c

Current discount, 37½ % @ 40 %.

Coal Screen Iron.
1⅜ by ⅝ by 5-16 ... 3.0c | 1 by ⅝ by 5-16 ... 3.5c

Angle Iron.
2½, 3, 3½ and 4 inch ... 3.3c
1½, 1¾ and 2¼ inch ... 3.3c
1¼ inch ... 3.4c
1 ... 3.6c
1⅛ by [illegible] inch, for Plow Handles ... 3.8c
1¼ by [illegible] " " " ... 3.8c
1⅜ by [illegible] " " " ... 3.9c

T Rail.

8 lbs. to the yard	2.9c	20 lbs. to the yard	2.8c
12 " "	2.8c	28 " "	2.8c
16 " "	2.8c	40 " "	2.8c

Splice Joints for 12, 16 and 20-lb. Rail, 40c each; 28 and 30-lb. Rail, 50c each; 40 lb., 60c each.
3½ by [illegible] Spikes for 20 and 28-lb. Rail ... 4½c
2½ and [illegible] by ⅜ " " 12 and 16-lb. " ... 4⅞c
2¼ by 5-16 " " 8-lb. Rail ... 5¼c

Flat Rails.—Punched and Countersunk.
1½ to 2 by ½ to ⅝ inch ... 3.0c
1½ by ⅜ and 7-16 inch ... 3.2c
1¼ by ⅜, 7-16 and ½ inch ... 3.5c

Juniata Nail Rods ... 6.50
Norway " ... 8.00
Guard Iron, ⅜x⅝x⅝ and ⅜x⅝x⅝ ... 4.0c
" ⅝x⅝x9-16 and ⅜x⅝x⅝ ... 4.2c
Draw Bars ... 3.3c
Dropper Bars ... 3.8c
Cylinder and Landside Iron ... 3.2c
Plow Beam Iron ... 3.0c

Nails.
10d to 60d ... $2.85

Best Quality Refined Cast Steel.
Square, Flat, Octagon and Round.
⅜ to 2 inches, inclusive ... 11½c
5-16 and 2⅛ to 3 inches ... 12½c
¼ and 3⅛ to 4 " ... 13½c
7-32 and 4⅛ to 5 " ... 14½c
3-16 and 5⅛ to 6 " ... 17½c
5-32 inch ... 21½c
⅛ inch ... 29½c
Oil Well Steel Forgings ... 20 c
No grade of Crucible Tool Steel shall be sold for less than above prices.

Machinery Steel.

	Crucible.	Bessemer & Open Hearth.
Ordinary Sizes, ⅜ to 2 inch Round	6½c	5c
5-16 and 2⅛ to 3 inches	7½c	6c
¼ and 3⅛ to 6 "	8½c	7c
7-32 inch	9½c	8c
3-16 "	11½c	10c

Square, Flat and Octagon, ½c extra throughout the list.
Cut to specified lengths, ½c extra.

Hammer Cast Steel.
2 inches and under ... 7 c
Above 2 inches ... 8 c

Sheet Steel.—Crucible.

	Best.	2d Qual.	3d Qual.	Bessemer & Open Hearth.
To 21 gauge	12c	10c	8c	6c

1c. extra for each additional gauge.
Cut to multiples or specified lengths, ½c. extra.

Miscellaneous Cast Steel.
Auger and Auger Bit ... 7c
Axle Steel for carriages and wagons ... 7c
Frog Points and Plates ... 8½c
" Side Bars ... 6½c
Pick, plain ... 7½c
" and Mattock, beveled ... 7½c
Skate Steel ... 7c
Table Cutlery ... 7½c
Pike and Cant Hook ... 7½c
Coal and Granite Wedge ... 7½c
Roller ... 6c
Spindle, subject to Machinery classification ... 7c
Trap Spring Steel ... 8c
Forged Crank Pins and Lathe Spindles ... 9c
Piston Rods, plain ... 6½c
" forged to shapes ... 9c
Slide Bars, plain ... 6½c
" forged to shapes ... 9c

Crucible, Open Hearth or Bessemer.
Boiler, Fire-Box and Flue Sheets, not less than 3-16 thick ...
Boiler, Fire-Box and Flue Sheets, not less than ⅛ thick ...
Circulars and semi-circulars, when ordered separately ...
Smoke Stack, to shape ...
Locomotive Tank Steel ...

File Cast Steel.
Square, Round, Half Round and Flat Bastard, 8-inch and over ... 8c
Mill Saw, 8-inch and over ... 8½c
Taper, 3½-inch and over ... 9½c
Horse and Shoe Rasp ... 8½c

Spring Cast Steel ... 6½c
Spiral and Taper, cut to lengths ... 7c

Tire Cast Steel.
1x¼ and over ... 7½c
1x3-16, ⅞x3-16 and ¼ ... 8c
1 and 13-16x⅛ and 5-32, ¾x3-16 and 5-32 ... 8½c
¾ and ⅝x⅛ and 3-32 and 12 g ... 9c
Solid Safe Cast Steel ... 7c

Agricultural Implement Cast Steel.
Fork and Rake, Crucible ... 7c
Horse Rake Steel, cut to lengths, Crucible ... 7½c
Hoe, Crucible ... 6½c
Corn Stalk Cutter, beveled ... 7½c
Beveled Hoe and Shovel Steel in Bars ... 7½c
Crucible Plow Steel in slabs ... 7c

Bessemer and Open Hearth.
Spring ... 4½c
" spiral and taper, cut to lengths ... 5½c
Tire, 3-16 thick and above ... 4½c
Toe Calk ... 4½c
Plow ... 4½c
Axle Billets ... 4c
Sleigh Shoe ... 4c
Cutter Shoe, cut to lengths and tapered ... 5½c
Scythe Back Steel ... 4c
Grain Drill Bars ... 7½c
" Points ... 8½c
Rolling Coulter Blanks, cut and punched ... 9½c
Thrasher Steel ... 4½c
" Teeth ... 5½c
Rolled Hammer Billets ... 4½c

Where Bessemer or Open-hearth Steel can be used in place of Crucible, the difference in price shall not be greater than 1c. per lb., except where especially provided in the list.

Terms.—Four months; 3 per cent. discount for cash, if remitted within 30 days.

Rolls and Castings.
Furnace, Floor and Straightening Plates ... 2½c
Housings and Castings not otherwise specified ... 3 c
Guide Plates ... 3½c
Spindles and coupling boxes ... 3 c
Sand Rolls and Pinions, large size ... 3 c
" " small size ... 3½c
Pipe Mill Castings ... 5 c
Rolling Mill Castings under 50 lbs ... 4 c
Spur and Bevel Wheels, large ... 3¾c
" " small ... 4¼c
Pulleys up to 30 inches ... 4¾c
" over 30 inches ... 4¼c
Engine Castings, light ... 4½c
" " heavy ... 4 c

Chilled Rolls.
6 to 7 in. diam., 7 to 20 in. long ... 5 c
8 to 15 in. " 8 to 40 in. " ... 5 c
25 to 24 in. " 15 to 72 in. " ... 4½c
14 to 31 in. " 72 to 108 in. " ... 4½c

White and Red Lead.
Strictly Pure White Lead in Oil, in kegs, 7c.; in 25 and 50 ℔ Tin Pails, ½c. ℔ ℔ over keg price; 12½ ℔ Tin Pails, 1c ℔ ℔ over keg price; assorted, 1 to 5 ℔ 100 ℔ Cases, 1c.
Dry White Lead ... 7 c
Orange Mineral, genuine, in kegs, 9c; in barrels, 8½c
Red Lead, very brilliant, " 7c; 6¾c
Litharge (Potter's Lead) " 7c; " 6¾c
Freights equalized with all points.
Terms: Note at sixty days, or if paid within 15 days from date of invoice, a discount of 2½ per cent. will be allowed, but not otherwise.

Window Glass.
Per Box of 50 Feet.—Discount 60&20 % on single strength, 70&5 % on double.

Size.	AA.	A.	B.	C.
Single Strength.				
6 x 8 to 10 x 15	$8.25	$7.50	$7.00	$6.50
11 x 14 to 16 x 24	9.25	8.50	8.00	7.25
18 x 22 to 20 x 30	10.75	9.75	8.75	7.75
15 x 36 to 24 x 30	12.25	10.75	9.00	8.50
26 x 28 to 24 x 36	13.00	11.50	9.75	9.00
26 x 36 to 26 x 44	14.50	13.25	10.75	9.50
26 x 46 to 30 x 50	15.00	14.00	11.25	10.50
30 x 52 to 30 x 54	16.00	14.50	12.00	
30 x 56 to 34 x 56	17.25	15.50	13.50	
34 x 58 to 34 x 60	18.25	17.25	15.00	
36 x 60 to 40 x 60	20.75	18.75	17.25	
Double Strength.				
6 x 8 to 10 x 15	12.75	11.75	10.75	10.00
11 x 14 to 16 x 24	14.50	13.25	12.50	11.25
18 x 22 to 20 x 30	17.25	15.75	14.00	
15 x 36 to 24 x 30	19.75	17.25	14.50	
26 x 28 to 24 x 36	21.00	18.50	15.75	
26 x 36 to 26 x 44	23.25	21.25	17.25	
26 x 46 to 30 x 50	24.00	22.50	18.00	
30 x 52 to 30 x 54	25.75	23.25	19.25	
30 x 56 to 34 x 56	27.75	25.00	21.75	
34 x 58 to 34 x 60	29.25	27.75	24.00	
36 x 60 to 40 x 60	33.25	30.00	27.75	

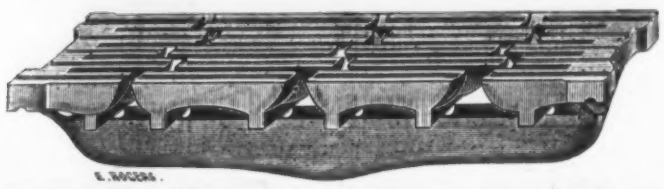
An additional 10 per cent. will be charged for all glass more than 40 inches wide. All sizes above 52 inches in length and not making more than 81 united inches, will be charged in the 84 united inches bracket.

DAVID S. CRESWELL,

816 Race Street, - - - - - PHILADELPHIA, PA.,

Manufacturer of

W. C. WREN'S PATENT GRATE BAR.



This Grate Bar consists of short parallel bars for carrying the coal, mounted above a long supporting bar, extending across the furnace by short transverse plates, holding the short bars, which sustain the heat so far above the supporting bar that it is kept comparatively cool, and is not, therefore, liable to warp, bend or burn. The bars which are subject to the heat, being made in short sections, do not strain the supporting bar. The short bars break joints at the meeting ends to prevent a straight open space across the whole; also to guide the rake used by firemen in cleaning the furnace better than they otherwise would.

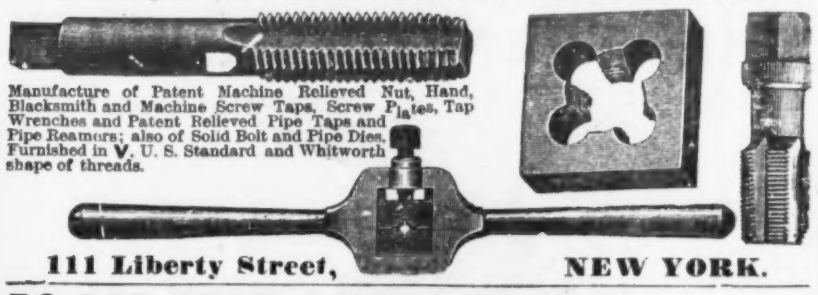
We therefore claim the following advantages over other grate bars offered for sale:

1. Great saving in fuel.
2. Such construction as will equalize all strain resulting from expansion and contraction, thus avoiding warping, and thereby insuring long service.
3. Thorough combustion of fuel, owing to the large air spaces exposed.
4. Bars will not weigh more in proportion than the ordinary bar, and in addition to a saving of 25 per cent in fuel, will last much longer than any other bar in use.

The **WREN GRATE BAR** is in use at the works of the Atlantic Refining Co. and other prominent concerns.

H. S. MANNING & CO.,

Sole Sales Agents for **THE MORSE TWIST DRILL AND MACHINE CO.'S**



Manufacture of Patent Machine Relieved Nut, Hand, Blacksmith and Machine Screw Taps, Screw Plates, Tap Wrenches and Patent Relieved Pipe Taps and Pipe Reamers; also of Solid Bolt and Pipe Dies. Furnished in V, U. S. Standard and Whitworth shape of threads.

111 Liberty Street, NEW YORK.

50 PER CENT. SAVING OF FUEL.

50 PER CENT. INCREASE OF OUTPUT.

WHITWELL HOT BLAST STOVES.

600 IN USE.

Witherow & Gordon,

Sole Agents for U. S.,

173 WOOD STREET,

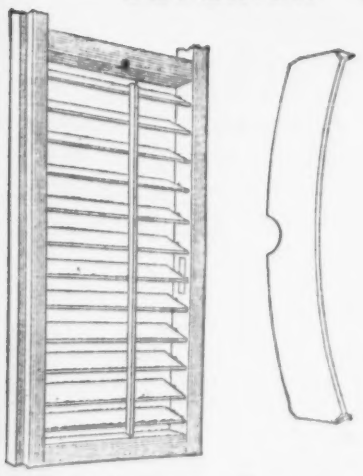
PITTSBURGH, PA.,

Blast Furnace Engineers, Machinists and Contractors.

BENTLEY'S Perfect Blind Slat Holder.

Patented.

SUPERIOR TO ALL OTHERS.



For tightening the Slats of Window Blinds and holding them at any required angle.

The sunlight is let in or shut out at will.

The blinds are made a much better protection from cold, because when the slats are shut they are so kept by the Holder and cannot be moved by the action of the wind.

Noisy rattling of the slats is prevented.

The holder is securely held by its spring and the sharp points at each end.

As it is made of brass it will not rust.

It cannot get out of order.

Its superiority over other holders is evident.

It requires no screws or nails to fasten it to the blind. Any one can apply it.

It cannot get loose or deface the blind as others do.

Retail Price, 5 cents each; 50 cents per dozen;

At which price samples will be mailed postpaid.

Trade Price, $6 per gross; Discount 50 per cent.

FOR SALE BY THE TRADE.

In case your jobbing house cannot supply you, orders will be promptly filled by

R. W. BENTLEY, Sole Manufacturer,

41 FOURTH ST., BROOKLYN, E. D., N. Y.

L. M. RUMSEY MFG. CO.

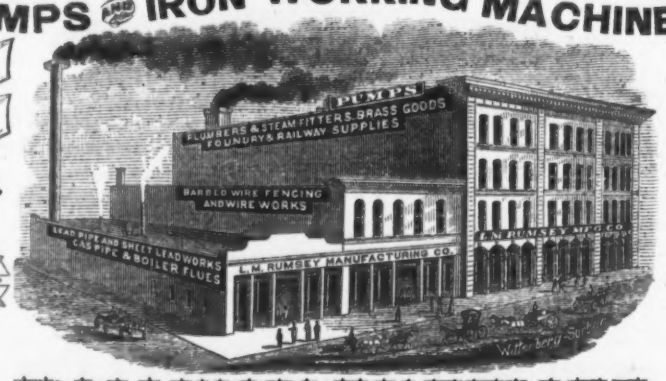
MANUFACTURERS & JOBBERS OF

PUMPS AND IRON WORKING MACHINERY,

LEAD PIPE & SHEET LEAD

PLUMBERS & STEAM FITTERS, BRASS GOODS,

BARBED WIRE FENCING & FENCE WIRE.



GAS PIPE & FITTINGS

BELTING, HOSE, PACKING,

PUMP CHAIN &c.

RAILWAY SUPPLIES

Nos 804 TO 820 N. SECOND ST.

ST. LOUIS, MO.

THE MEDART PATENT WROUGHT RIM PULLEY.

Forty Per Cent. Lighter and 100 Per Cent. Stronger

than any cast pulley. No shrinkage strains; perfectly balanced for high speeds; better surface for belt, and

The Cheapest Pulley in the Market.

We make these Pulleys from 10 inches to 10 feet diameter, any face, crowning or straight, split or whole, single or double arms.

Large Pulleys a Specialty.

Send for price list.

The Hartford Engineering Co.,

HARTFORD, CONN.

Sole licensed manufacturers for the New England, Middle and Atlantic Coast States.

Also Shafting, Hangers and Couplings.

RIPLEY & KIMBALL,

Nos. 907, 909 & 911 N. Main St., ST. LOUIS.

IRON & STEEL BOILER PLATES & SHEETS.

Brass and Iron Fittings for Steam.

Lap-Welded Pipe & Boiler Tubes

RAILWAY AND BOILER MAKERS' SUPPLIES.

AGENCY NATIONAL TUBE WORKS CO.

Gentlemen.—This cut illustrates our

CAST IRON

Furnace Lamps

which are superceding entirely the Tin Lamps wherever introduced, in consequeuce of their durability. They are now extensively used in the Iron Districts of Ohio and some in Pennsylvania.

We call your attention to and solicit your order for them, confidently asserting that they are an **A No. 1 article in every respect.**

Sample sent if desired.

PRICE, $12 PER DOZEN.

Taylor & Boggis,

CLEVELAND, O.

TRADE MARK

WICKERSHAM & CO.,

MANUFACTURERS OF

Railway, Miners', Mill & Machinists' Supplies

W. & Co.'s Packing: Steam, Hydraulic and Locomotive. Samples sent free.

Lubricants for Engines, Shafting, &c.; Rolling Mill, Railroad, Gear and Axle Grease.

Also, Star Cylinder Oils.

Samples sent free for trial upon application.

No. 308 Branch Street, Philadelphia, Pa.

WENTWORTH'S NOISELESS SAW VISE

Has a Flexible Rubber Cushion or Muffler between the Jaws, which prevents vibration and renders saw filing noiseless.

SPECIAL EXPORT PRICES.

C. N. MARCELLUS & CO., 69 Varick St., N. Y. City,

Manufacturers' Agents, and Dealers in Mill, Machinists' and Engineers' Supplies.

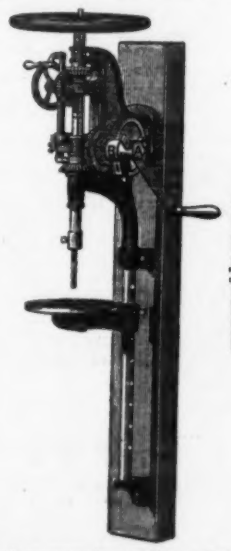
GEORGE C. TAFT,

Worcester, Mass., U. S. A.,

Manufacturer of

Improved Upright and Horizontal Self-Feed Drills,

For Blacksmiths' and Carriage Makers' Use.



Illustrated circulars, giving descriptions of my several size drills, sent on application.

This cut represents my No. 2 Improved Drill, double geared, so arranged that by moving the crank from A to B it will give a slow motion for heavy drilling to the drill spindle.

THE LA FRANCE FIRE ENGINE CO.

Manufacturers of

Rotary Steam Fire Engines

ELMIRA, N. Y.

We claim the **BEST PORTABLE MILL** made for grinding good Corn Meal for table use. It requires little dressing. Grinds from 1500 to 2000 bushels with one dressing. It makes round meal, not floury and pasty. It takes from 20 to 33 per cent. less power than any other Mill not using our Stones. Address NORTH CAROLINA MILL STONE CO., Westminster, Md.

"I have a pair of Moore County Grit Mill Stones which have been in use 30 years, constantly under heavy power. Grind 19 to 20 bushels per hour. Dress every 2500 bushels, and they make the best meal in the county. If I could not replace them with same grit, I would not part with them for five times the cost of ordinary stones. I believe them to be superior to any known stone or buhr for grinding corn meal. Respectfully yours,

GEORGE K. TATE, Mountain Lake, N. C."

THE MAGIC HOE.

The best *FIELD* and *GARDEN CULTIVATOR* in the world. *Sells at Sight.*

No Hardware House complete without it.

Special Discounts to the Trade. For Price Lists and Discounts address

THE HUGHES CULTIVATOR CO.,

Manufacturers, *HAMILTON, O.,*

Or, **W. H. QUINN & CO.,**

79 Chambers St., New York City.

John Waldron,

Manufacturer of

Sprout's Double and Single Shear

Horse Hay Forks

And

Sprout's

HAY ELEVATORS, PULLEYS and GRAPPLES.

Send for Circulars.

Muncy, Lycoming Co., Pa.

BOSTON.

Reported by Macomber, Bigelow & Dowse.

Anvils.—"Eagle American"	₩ lb 9½c. dis 20 %
Anvil & Vise.—	
No. 1, $5 25; 2, 4.25; 3, 3.40 each	dis 25 %
Augurs & Bitts.—Snell's Auger	dis 40&10 %
L'Hommedieu's Ship Augers	dis 15 %
Jenning's Bitts	dis 10&10&10 %
Cook's Bitts	dis 40&10 %
Sheparason's Double-Cut Bitts	dis 45 %
" " Gimlets	dis 40 %
Stearn's Extension Hollow Augers—	
No. 2, ₩ doz. $48.0, No. 3, ₩ doz. $60.00 list,	dis 20 %
Bonney's Extension Hollow Augers	₩ doz $36.00
Pierce's Bitts	dis 40 %
Griswold "	dis 40&10 %
Axes.—Blue Jackets	per doz 9.00
Red Cross	per doz 8.00
" Handled	per doz 12.00
Dowse " Boys'	dis 33⅓ %
Ax Handles.—	
Oak Extra, 31 in., No. A	₩ doz $2.00
" 34 in., No. A	₩ doz 2.25
" 31 in., No. B	₩ doz 1.50
" 34 in., No. B	₩ doz 1.75
" 31 or 34 in., No. C	₩ doz 1.15
Axle Clips	dis 50 %
Balances.—Chatillon's	dis 15&10 %
Barn Door Rail.—	
Cast Angle (for Anti-Friction Hangers)	per ft. 30
" Half-Round	per ft, ⅝, 35c. ¾, 50
Wrought "	per ft, ½, 40; ⅝, 50; ¾, 60
Bells.—Connel's Crank Gong reduced list	dis 20&10 %
Bird Cages.	
Japanned M. B. & D., reduced list, 1879	dis 40 %
Brass " " 1879	dis 33⅓ %
Blind Fasts.—Lock Fasts	₩ C sets $6.00
No. 6 Fasts	₩ C sets 6 50
Yeazle Fasts	₩ C sets 6.50
Shedd's	₩ C sets 7.00
Blind Hinges.—Mail. Hook, 3 holes	₩ C sets 8.50
Brad Awl Handles.—	
Phœnix Adjustable	₩ doz $2.00
Bolts.—Norway Iron Carriage	dis 70&5 %
Common "	dis 80&5 %
Borax.—Refined	₩ lb 14½c
Boring Machines.	
Eagle Upright each, $5.50 list } Eagle Angle each, 6.75 list }	dis 40&10 %
Snell Augers	₩ set 2.43
Braces.—Barber's	dis 40 %
Spofford's	dis 40 & 5 %
Backus'	dis 50 & 10 %
Bracket Saws.—Holly Scroll Saw	each, $2.50
Demas Lathe and Scroll Saw	" 6.50
Bracket Saws, extra quality, to No. 4	₩ gro $0.75
Steel Frame, with patterns	₩ doz 6.50
Lester	dis 20 %
New Rogers, all iron	dis 25 %
Bracket Saw Blades.	
Griffith's patent	₩ gross 750
Brackets.—B. B. & B. Flower Pot reduced list.—	
	dis 25&10 %
Bronzed Shelf, B. B. & D. newlist	dis 50&10 %
Store Shelf	dis 40&10 %
Bronze Hardware.—	
Butts.—Union Fast Joint	dis 45&10 %
" Loose "	dis 55&10 %
" Japanned Acorn	dis 55&10 %
" Silvered "	dis 55&10 %
" Boston Finish	dis 70&10 %
Union Spiral Spring	dis 20&10 %
Wrought Brass	dis 50 %
Carriage Bolts.—Eagle Norway	dis 70&5 %
Common	dis 80&5 %
Carriage Jacks.	
"Climax" No. 1	₩ doz $20.00
" No. 1½	" 15.00
" No. 2	" 13.50
"Universal"	dis 25 %
" No. 1	each, $2.00
" No. 2	" 3.00
" No. 3	" 6.00
" No. 4	" 6.00
" No. 5	" 6.50
Cartridges.—U. S. Cartridge Co	dis 70 %
Cards.—Watson's makeHorse and Curry	dis 10 %
" Cotton	dis 10 %
" Wool	dis 10 %
Casters.—Bed and Table	dis 30&10 %
Chain.—Traces 6½, 10, 4, straight	₩ pair 450
" 6½, 10, 4, twisted	₩ pair 600
" 7, 12, 2, "	₩ pair 750
Coil 3-16	₩ lb 11 c
" ¼	₩ lb 8 c
" 5-16	₩ lb 7 c
" ⅜	₩ lb 6 c
" 7-16	₩ lb 6½c
" ½	₩ lb 5½c
Chalk.—White, Carpenter's	₩ gross 900
Red, Carpenter's	₩ gross 8.00
Blue "	₩ gross $1.00
Chisels.—Hart. Bliven & Mead, Framing	dis 70&10 %
Underhill, Framing	dis 20 %
Buck's Chisels	dis 30 %
Clothes Line.—	
Galvanized Wire, 100 feet each	₩ doz $4.00
Coat Hods.—"Dover."—Galvanized, new list	dis 50 %
Japanned, new list	dis 40 %
Coffee Mills.—New list	dis 33⅓ & 10 %
Copper Rivets.	dis 33⅓ %
Cow Ties.	
No. 30, 3 ft. No. 6 Wire, with toggle	₩ doz $3.00
No. 35, 3 ft. " " with snap	₩ doz 3.80
No. 40, 3½ ft. " " with toggle	₩ doz 3.90
No. 45, 3½ ft. " " with snap	₩ doz 4.10
No. 50, 4 ft. No. 4 " " with toggle	₩ doz 4.40
No. 55, 4 ft. " " with snap	₩ doz 4.75
No. 60, 4½ ft. " 3 " with toggle	₩ doz 5.50
No. 65, 4½ ft. " " with snap	₩ doz 5.80
Cocks.—Brass, L. F. & C.	dis 40 %
Cordage.—Manila, usual trade dis 10	₩ lb 14½c
Jute	₩ lb 9c
Crow-Bars.—Cast Steel	₩ lb 6c
Iron, Steel Pointed	₩ lb 4c

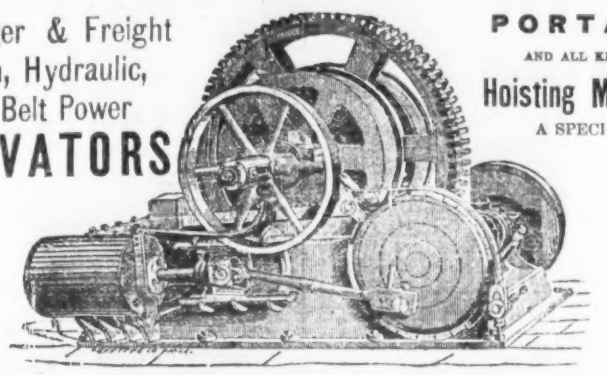
Cutlery.—Pocket, American Shear Co.'s dis 40 %
Butcher Knives, "Woods," Lap Bolster, Square Handle dis 30 %
Steak Knives dis 25%
Lap Bolster, Oval Handle dis 20 %
Sticking dis 20 %
Skinning dis 30 %
Butcher, Common Round Handle, "Woods" dis 20 %
Shoe Knives, "Woods" dis 20 %

Dividers.—Cook's dis 25 %
Dog Collars dis 20 %
Dog Muzzles.—Automatic dis 15 %
Door Springs.—Torrey's Rod ₩ doz $2.00
Imitation Torrey's Rod ₩ doz $1.75
Gem Coil, new list dis 33⅓ %
Crown ₩ doz $1.25
Warners ₩ doz $2.00
Door Stops.—"Thurston's" dis 50 %
Drawer Knobs.—"Thurston's" dis 50 %
Drills.—Morse Bitt Stock dis 25 %
Morse Straight Shank dis 20 %
Emery.—Wellington Mills ₩ lb 10c
Walpole Emery Mills ₩ lb 60
Turkish in 10 lb cans ₩ lb 80
Enamelled Ware.
Standard Mfg. Co. Kettles dis 40&10 %
" Sauce Pans dis 25 %
Felloe Plates.—Wrought ₩ lb 9c
Files.
American File Co. dis 40 %
Nicholson " dis 40 %
Fluting Machines.
Knox list, $4.00 dis 20 %
American list, $3.40 dis 20 %
Forks. W. G. & Co., Manure dis 50 %
Gimlet Bitts.
Genuine German, No. 125, 1-32 to 8-32, per doz $1.60
Pierce's per doz 880
Glass Cutters.
Combination Glass Cutter and Knife Sharpener ₩ doz $1.00
Grub Hoes.—E. P. & Co.'s No. 2, 11.50 ₩ doz dis 30 %
Hammers.—Maydole's dis 15 %
Hartford Hammer Co. dis 20 %
Hangers & Rollers.—Anti-Friction dis 50&10 %
Acme Rollers dis 50 %
Climax dis 50 %
Common Hangers dis 30&10 %
" Rollers dis 3⅓&10 %
Hand Screws dis 10 %
Hatchets.—C. F. Dowse new list dis 33⅓ %
Underhill dis 25 %
Hay Knives.—Lightning ₩ doz $18.00 net
Fisher's Patent ₩ doz @14.00
Hinges.—Strap and T (new list) dis 50&10 %
Providence Plate ₩ lb 40
Wrought Screw Hook ₩ lb 40
Hoes.—W. C. & Co.'s dis 50 %
Hooks and Staples.—Brewers' dis 40 %
Horse Nails. No. 6 7 8 9
National Finished .25 .21 .20 .19 dis 20 %
Putnam Pointed .28 .26 .25 .24 10&10 %
Horse Nails.—Bridgewater dis 25 %
No. 5 21; No. 7, 21; No. 8, 20; No. 9, 19.
Ice Cream Freezers.—"Packer's" new list dis 40 %
Knobs.—"Norwalk." New list dis 15 %
Silver Glass dis 50&10 %
" Bell Pulls dis 50&10 %
Lanterns.—Guarded No. 99 ₩ doz 7.50
Tubulars, No. 0 ₩ doz 3.00
Railroad, Oil, No. 43 ₩ doz 9.00
Triangular ₩ doz 4.00
Hurricane dis 20 %
Lawn Mowers.—The "Daisy."
12 in. cut each, $8.50
14 in. cut " 9.00
16 in. cut " 9.50
18 in. cut " 10.00
Lead.—Sheet ₩ lb 7 c
Pipe ₩ lb 6½c
Locks.—Norwalk Genuine Bronze Goods dis 45 %
Eagle Cabinet dis 25 %
" Trunk dis 15 %
W. Wilcox & Co., Padlocks dis 40 %
American Lock Co.'s Steel Key dis 33⅓ %
Manure Forks.—W. C. & Co. dis 50 %
Mattocks.—E. P. & Co., Long Cutter, 15.00 ₩ doz.
E. P. & Co., Short Cutter, 14.50 ₩ doz. dis 30 %
" " Pick " 16.00 ₩ doz. dis 30 %
Measuring Tapes.—Eddy's dis 20 %
Meat Cutters.—Miles' Challenge dis 30 %
Hale's, (New list) dis 40 & 10 %
American dis 25 %
Money Drawers.—Tucker's Alarm ₩ doz $22.50
Mouse Traps.—Delusion ₩ doz 2.00
Novelty ₩ doz 1.75
Nails. ₩ keg, 3.00 rates
Oilers.—Zinc and Tin dis 50 %
Brass and Copper dis 40 %
Ox Bows.—Extra finished and varnished list net
1⅝ in., ₩ doz. pair, $5.75 | 2 in., ₩ doz. pair $9.00
1¾ in., " " 8.00 | 2¼ " " 11.00
Padlocks.—W. Wilcox & Co.'s dis 40 %
Paper.
Tarred Sheathing ₩ lb, 2½c
Tarred Eagle Brand ₩ lb, 2½c
Picks.—E. P. & Co., Adze Eye, 5 50 to 12.00 dis 30 %
" " 5 50 to 13.00 dis 30 %
Planes.—Auburn Tool Co. dis 25 & 10 %
N. Y. Tool Co. dis 20 & 10 %
English Iron dis 20 & 10 %
Bailey's dis 20&10 %
Plated Ware.—Rogers & Bro. dis 10&5 %
Pliers.—Vom Cleff & Co.'s net list
Button's Wire Pliers dis 33⅓
Plumb & Levels.—Stanley, R. & L. Co. dis 60&10
Pocket Knives.
American Shear Co.'s dis 40
Potato Diggers.—W. C. & Co. reduced list dis 50
Pulleys
Acme or Excelsior, 2¾ in. per doz 210
" " 2 in. " 240
Pulley Blocks dis 40 %
Pumps.—Union Manufacturing Co.
Iron Cistern dis 40 %
" Pitcher Spout dis 40 %
Copper dis 30 %
Rivets.—Black dis 65 %
Carriage in ₩ lb papers dis 35 %
Copper dis 33⅓ %
Razors.—Torrey's dis 10 %
Razor Strops.—Torrey's Full line
Rules.—Stanley Boxwood, dis 70&10 %
" Ivory, dis 60&10 %

Sadirons.—Common ₩ lb 3½c
Laundry ₩ lb 6½c
Tailor's Goose ₩ lb 33
Enterprise, "Potts" dis 35 %
Sash Locks.—King & Hutchinson's, new list dis 40 %
Sash Pulleys.—Baeder & Adamson dis 25 %
M. B. & D. dis 25&5 %
Sash Weights.—Patent Eye ₩ lb 1½c
Saws.—Hand Saws, Disston's dis 20 %
Wheeler & Clemson dis 20 %
Cross-Cut Saws.
W. M. & C., Common Tooth, No. 1 ₩ foot 35c
" " Champion " ₩ foot 35c
Disston's, Common " ₩ foot 65c dis 40%
" Gt. American " ₩ foot 65c dis 40%
Boynton's Lightning " ₩ foot 45c
M. B. & D., Hand Saws dis 25 %
W. M. & Co.'s Circular Saws dis 35 %
Richardson Bros. dis 25 %
Saw Blades.—Disston dis 20 %
W. M. & C. dis 12 %
Welch & Griffith, Extra ₩ doz $8.40
" " No. 2 ₩ doz 7.00
Scales.—Fairbanks dis 20 %
Screws.—Aiken's Flat-Head Iron dis 40 %
American Flat-Head Iron dis 40 %
" " Brass dis 40 %
" Round-Head " dis 30 %
" " Iron dis 35 %
Grilley " Nickel-plated Common dis 40 %
Scythes.—Clippers, in boxes ₩ doz $9.00
Shaves.—Kimball's ₩ inch 75c
Watrous dis 15 %
Shears.—American Shear Co., new list dis 70 %
Shot.—Tatham's ₩ lb 7½c
Shovels.—O. Ames, new list dis 12 ½ %
O. Ames, other brands, new list dis 12½ %
M. B. & D. dis12½ %
Oxford Birmingham Pattern dis 40 %
Sinks.—Magee Patent dis 30 %
Snow Shovels.—Malleable tips $1.00
Skates.—Union dis 20 %
Acme dis 25 %
Stock and Dies.—King's dis 10&5 %
Tacks.—A. Field & Son's dis 30&10 %
Pittsfield dis 30&10 %
Swedes Tinned 45&10 %
Swedes Iron 30&10 %
Gimp and Lace 30&10 %
Copper Tacks 30&10 %
All balances on list 25&10 %
Traps.—Oneida, Genuine dis 33⅓ %
Oneida, Imitation, H. & N. dis 50 %
Blake's dis 40 & 10 %
Vises.—Simpson's Adjustable dis 20&5 %
Howard Vise Co. dis 25 %
Prentiss' dis 20 %
Weather Strips.—Packer's ₩ doz $1.00
Browne's Flexible Rubber dis 33⅓ %
In 25 feet boxes; No. 1, ½ in. wide, ₩ yard 10c. No. 2, ⅝ in., 12c.; No. 3, ¾ in., 20c.; No. 4, 1 in., 25c.
Black Walnut Spring Weather Strips ₩ doz. $3.50
Window Springs. dis 20 %
Babcock's No. 4 ₩ gross $6.50
" " 4 ₩ gross 4.15
Wire Cloth.—"Clinton" ₩ ft. 0
Wire Fence.
Scutt's Patent, Painted ₩ lb 8½c
" Galvanized ₩ lb 9½c
Wire Goods.—Gate Hooks and Eyes, &c new list dis 60&10 %
Wrenches.—A. G. Cook's dis 40 & 10 %
Girard Mfg. Co. dis 50 %
Girard Agl. dis 70 %
Wringers.—Universal, No. ₩ doz $48.00
Universal, No. 2½ ₩ doz 48.00
Novelty, No. 10 ₩ doz 45.00
Excelsior, No. A ₩ doz 75.00
" No. B ₩ doz 63.00
" No. CC ₩ doz 105.00
Novelty Set Tub, E ₩ doz 66.00
Eureka ₩ doz 48.00
Keystone, Wood Frame No. 1½ ₩ doz 42.00
" Iron Frame No. 2½ ₩ doz 42.00
Zinc ₩ lb 7½
Withington, Cooley & Co.—Hose, Rakes, Forks, &c. dis 50 % Special rates for Export.

Passenger & Freight
Steam, Hydraulic,
and Belt Power
ELEVATORS

PORTABLE
AND ALL KINDS OF
Hoisting Machinery
A SPECIALTY.



IRON FURNACE HOIST.

For Handling Stock to Top of Stack with One or Two Platforms.

STOKES & PARRISH, 3001 Chestnut St., Philadelphia.

MAGIC PLATE FOR PIPE.

No. 1 threads and cuts off			⅛ to ¾
No. 2	"	"	" ¼ to 1¼
No. 3	"	"	" ½ to 2
No. 4	"	"	" 1½ to 3
No. 5	"	"	" 2½ to 4
Size A threads bolts			¼ to ¾
Size B	"	"	" ¼ to 1

W. U. MASTERS,
Cleveland, O.

New York Agent,
JOHN Q. MAYNARD,
97 Liberty St., New York.

C. E. KIMBALL,
128 Oliver street, Boston, Mass.,
New England Agent.

$ $ $ $ SAVED $ $ $ $

1977 NINETEEN HUNDRED SEVENTY-SEVEN 1977

MACHINES

BOTH NEW AND SECOND-HAND

COMPRISING
MACHINE AND BLACKSMITH TOOLS OF EVERY DESCRIPTION.
WOOD-WORKING MACHINERY IN ALL ITS BRANCHES. PORTABLE ENGINES. UPRIGHT and HORIZONTAL STATIONARY ENGINES, 1 TO 300 HORSE POWER. LOCOMOTIVE FIRE-BOX, HORIZONTAL, and UPRIGHT BOILERS, 1 TO 100 HORSE POWER. WATER WHEELS, COTTON AND WOOLEN MACHINERY, STEAM PUMPS, GRISTMILL MACHINERY, Etc., FULLY DESCRIBED, AND PRICES ANNEXED,

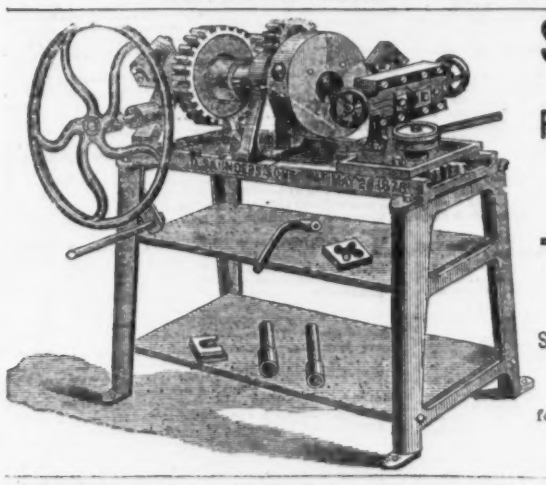
S.C.F.&CO.

☞ Send stamp for same,] In our List No. 23. [stating what you want. ☜

We have the Largest Assortment of Machinery to be found in the hands of any firm in the country.

Works and Main Office, Manchester, N. H.
S. C. FORSAITH & CO.

Branch Office and Wareroom, 209 Center street, New York City.



Saunders' Sons'

NEW
PIPE-THREADING MACHINE,
FOR
Hand or Power,

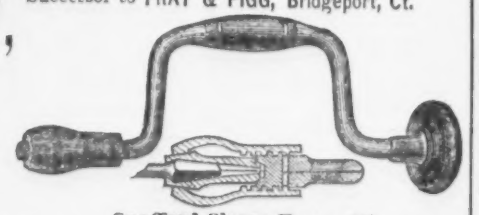
The I X L.

Manufacturers of
Steam and Gas Fitters' Tools.
Pipe-Cutting and Threading Machines,
for Pipe Mill use, &c., a specialty.
Yonkers, N. Y.
Send for circulars.

JOHN S. FRAY,

Successor to FRAY & PIGG, Bridgeport, Ct.

Spofford Bit Brace.



Spofford Sleeve Brace. ☞

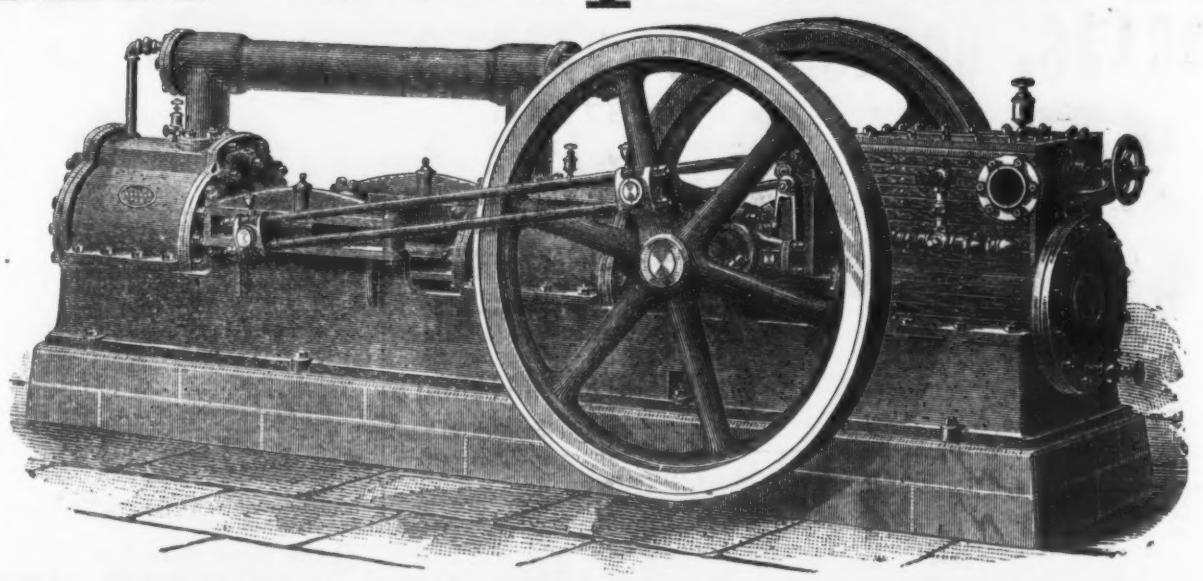
The Spofford Bit Brace is made under Letters Patent of the U. S. A., granted to N. Spofford, March 23, 1880, assigned to Fray & Pigg, and now held by John S. Fray, Mr. Pigg having retired from the firm.

All Iron, Five Sizes.	Cocoboio Head and Handle.	Sleeve Brace.
No. 7.....7 inch sweep.	No. 107.....7 inch sweep.	No. 70.....7 inch sweep.
No. 8.....8 "	No. 108.....8 "	No. 80.....8 "
No. 10.....10 "	No. 110.....10 "	No. 100.....10 "
No. 12.....12 "	No. 112.....12 "	No. 120.....12 "
No. 14.....14 "		

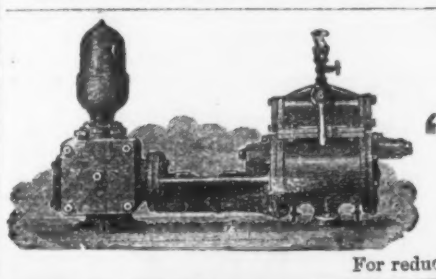
LYON'S HAND OR POWER PUNCHES AND SHEARS,

For Round, Flat or Square Iron,
ALSO,
Polishing & Buffing Machinery,
HYDRAULIC JACKS,
To raise from 2 to 120 tons.
HYDRAULIC PRESSES,
For special and general use.
HYDRAULIC HAND & POWER PUMPS
with 1 to 6 plungers, to run hydraulic presses, with either uniform or changeable speed.
Second-Hand Presses.
E. LYON & CO.,
470 B Grand Street, NEW YORK.
Send for circular of what you want.

Air Compressors.



THE NORWALK IRON WORKS CO., South Norwalk, Conn.



A. S. CAMERON'S
PATENT
"SPECIAL" STEAM PUMP

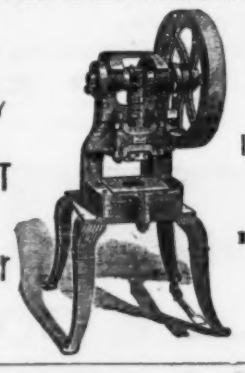
Is the Standard of Excellence at Home and Abroad

For reduced price lists address **A. S. CAMERON, East 23d Street, New York.**

E. W. Bliss,

SUCCESSOR TO **BLISS & WILLIAMS,**
MANUFACTURERS OF ALL KINDS OF
PRESSES and DIES.

Also Manufacturers of
SPECIAL MACHINERY
FOR
WORKING SHEET METALS, &c.
FRUIT & other CAN TOOLS.



Plymouth, Pearl and John Streets,
BROOKLYN, N. Y.,
U. S. A.

GOLD MEDAL AWARDED PARIS EXPOSITION, 1878.

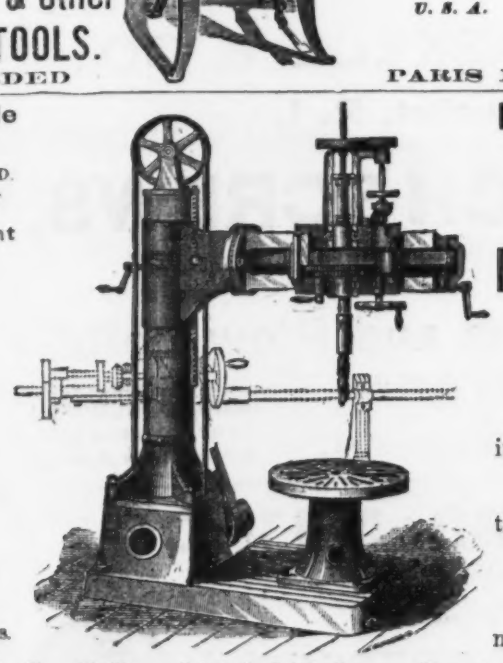
Box's Patent Portable Double Screw Hoists, &c., &c.

FIRST PREMIUMS WHEREVER EXHIBITED.
Philadelphia, Pa., 1879. St. Louis, Mo., 1879.
Cincinnati, O., 1880. Philadelphia, Pa., 1880.

Box's New Patent Portable Right and Left Screw Hoist.

BOX'S PATENT POWER OR HAND ELEVATORS.
Sizes 1000 to 20,000 pounds capacity.

BOX'S PATENT
UNIVERSAL
Radial Drill Press.



Patented Nov. 26, 1876.

Combines several machines in one.

Can drill horizontally or vertically.

Durable, powerful, noiseless.

Full descriptive circulars furnished on application.

ALFRED BOX & CO., 312 & 314 Green Street, PHILADELPHIA, PA.

Ludlow Valve Mfg. Co.,

OFFICE AND WORKS:
933 to 954 River St. & 67 to 83 Vail Ave., Troy, N. Y.,

VALVES.

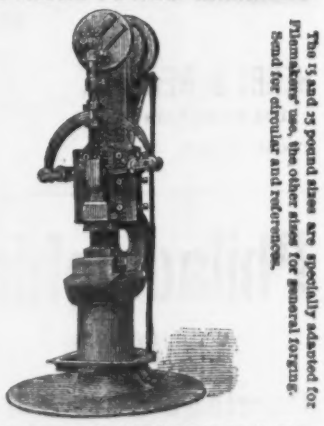
Double and Single Gate, ¾ in. to 48 in.—outside and inside Screws, Indicator, &c. for Gas, Water and Steam. Send for Circular.

Also FIRE HYDRANTS.

STATIONARY AND PORTABLE
STEAM ENGINES,
Shafting, Hangers, Pulleys and Gearing.
SAW MILLS,
Hoisting Engines and Mining Machinery.

Address, **LANE & BODLEY CO.,**
John and Water Streets, CINCINNATI, OHIO, U. S. A.

DEAD-STROKE POWER HAMMERS.



CONSTRUCTION IMPROVED. Prices Reduced. Seven Sizes. 5 to 250 Pounds.

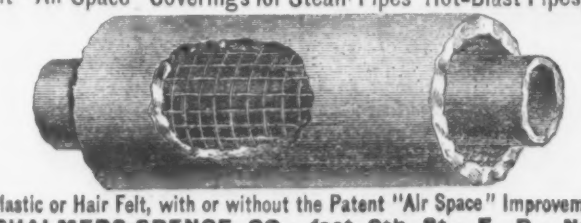
The 15 and 25 pound sizes are specially adapted for Filemakers' use, the other sizes for general forging. Send for circular and references.

DIENELT, EISENHARDT & CO.
MAKERS.
1310 Howard St., Philadelphia.

ASBESTOS MATERIALS, FIBER, MILLBOARD, PACKING & CEMENT.

THE NATIONAL STEEL TUBE CLEANER.
Saves its cost every time it is used.

The Patent "Air Space" Coverings for Steam Pipes Hot-Blast Pipes, Boilers, &c.



Plastic or Hair Felt, with or without the Patent "Air Space" Improvement.

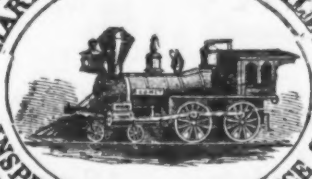
THE CHALMERS-SPENCE CO., foot 9th St., E. R., New York.

CRANE BROTHERS MANF'G. CO.,

CHICAGO.
MANUFACTURERS OF
WROUGHT IRON PIPE,
STEAM PUMPS,
STEAM and GAS FITTINGS.
Steam and Hydraulic
Freight and Passenger Elevators
STEAM HOISTING ENGINES
for Furnaces, Mines, &c.
Stationary Steam Engines, &c

Machinery, &c.

HARTFORD STEAM BOILER INSPECTION AND INSURANCE CO.



Issues Policies of Insurance after a careful inspection of the Boilers,

COVERING ALL LOSS OR DAMAGE TO

Boilers, Buildings and Machinery,

ARISING FROM

STEAM BOILER EXPLOSIONS.

The Business of the Company includes all kinds of STEAM BOILERS.

Full information concerning the plan of the Company's operations can be obtained at the

COMPANY'S OFFICE, HARTFORD, CONN.,

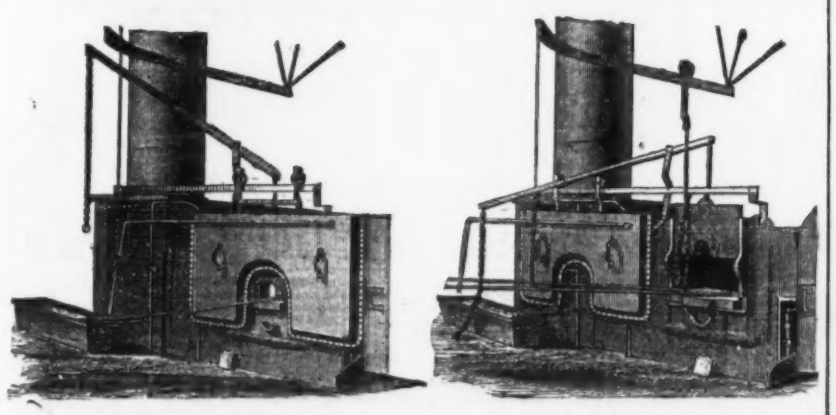
or at any Agency.

J. M. ALLEN, Pres. W. B. FRANKLIN, Vice-Pres. J. B. PIERCE, Sec.

Board of Directors:

J. M. ALLEN, President.
LUCIUS J. HENDEE, Pres't Ætna Fire Ins. Co.
FRANK W. CHENEY, Ass't Treas. Cheney Brothers Silk Manufacturing Co.
CHARLES M. BEACH, of Beach & Co.
DANIEL PHILLIPS, of Adams Express Co.
GEO. M. BARTHOLOMEW, Pres't Amer. Nat'l Bank.
RICHARD W. H. JARVIS, Pres't Colt's Fire Arms Manufacturing Co.
THOMAS O. ENDERS Sec'y Ætna Life Ins. Co.
LEVERETT BRAINARD of Case, Lockwood & Brainard.
GEN. WM. B. FRANKLIN, Vice Pres't Colt's Pat. Fire Arms Mfg. Co.
GEO. CROMPTON, Crompton Loom Works, Worcester
WILLIAM ADAMSON, of Baeder, Adamson & Co., Philadelphia.
HON. THOS. TALBOT, Ex-Governor of Mass.
NEWTON CASE, Case, Lockwood & Brainard, Hartford
WILLIAM S. SLATER, Cotton Manufacturer, Providence, R. I.
NELSON HOLLISTER, of State Bank, Hartford.
D. R. SMITH, Pres't Springfield Fire & Marine Ins. Co.

McDONALD'S PATENT SHIELD.



For Protecting the Men from Heat when Working in Front of Puddling, Heating and other Furnaces.

H. McDONALD, Patentee,

MANAGER SLIGO ROLLING MILLS,

PITTSBURGH, PA.

POWER, FOOT OR HAND PUNCHING AND SHEARING PRESSES.

Punching, Stamping, Embossing and Shearing Presses; all sizes; great variety; from $25 upward.

Our patent *pendulum* foot presses are more powerful than any ever before invented, the largest size punching 3-4 hole in 1-4 iron, 5-8 x 5-16, 3-8 x 3-8,, six inches from edge, one man doing all the work. Shears, hand or power, all sizes, for cutting plate, bar, flat or round metal, from $10 to $1000.

POWER PRESSES, all sizes; superior workmanship, at lowest prices. When sending for Catalogue, say what kind of work you wish a press to do.

PEERLESS PUNCH and SHEAR CO.,
52 Dey Street, New York City.

THE MACKENZIE PATENT CUPOLA & BLOWER.

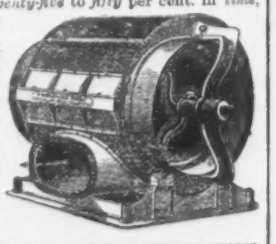
Send for circular to

Smith & Sayre Mfg. Co.,

PROPRIETORS, 21 Cortlandt St., New York.

This Cupola has made a great revolution in melting Iron. It differs from all others in having a CONTINUOUS TUYERE, or in other words, the blast enters the fuel at all points. Above one ton capacity per hour, they are made *oval in form*. This brings the blast to the center of the furnace with the *least resistance* and *smallest* possible amount of power, and in combination with the continuous Tuyere causes complete diffusion of fine air throughout the furnace, and uniform temperature, melting *ten* or *fifteen tons* an hour with the pressure of blast required to melt *two* or *three tons* in an ordinary Cupola. It also enables us to save very largely in *time* and *fuel*, the experience of our customers showing a gain of *twenty-five* to *fifty* per cent. in *time*, and *twenty-five* to *forty* per cent. *fuel* over the ordinary Cupola, and a BETTER QUALITY OF CASTING, especially in light work. This is due to the thorough diffusion of the air and more perfect combustion, extracting less carbon from the iron, making a softer and tougher casting.

We manufacture these Cupolas of any desired capacity, numbered from 1 to 20, inclusive, the numbers indicating the melting capacities in TONS PER HOUR—No. 1, one ton,; No. 2, two tons; No. 3, three tons per hour, and so on up to 15, or 20 tons. We have *improved* the *construction* of these Cupolas in every way, have increased their strength and durability, and sought to make them as convenient for working and repairs as our own and the experience of our customers could suggest.



BAEDER, ADAMSON & CO.

Manufacturers of SAND & EMERY PAPER & EMERY CLOTH.

(Also in Rolls, for machine work.)

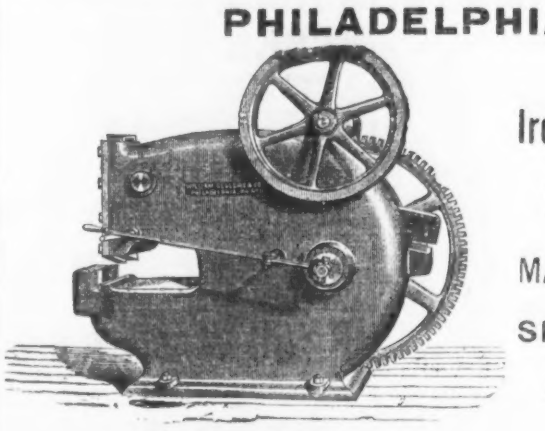
Ground Emery, Corundum & Flint, Glue & Curled Hair, Hair Felt, & Felting for Covering Boilers, Pipes, &c., Cow Hide Whips.

Stores: PHILADELPHIA, 730 Market St., NEW YORK, 67 Beekman St., BOSTON, 142 Milk St. CHICAGO, 152 Lake St.

Machinery, &c.

WILLIAM SELLERS & CO.,

PHILADELPHIA.



Shearing Machine.

Manufacturers of

Iron & Steel Working Machinery,

MACHINISTS' TOOLS,

SHAFTING,

GEARING, &c.,

INJECTORS.

BRANCH OFFICE, 79 Liberty Street, New York.

MORSE TWIST DRILL AND MACHINE CO.

NEW BEDFORD, MASS., Sole Manufacturers of

Morse Patent Straight-Lip Increase Twist Drill,

Beach's Patent Self-Centering Chuck, Solid and Shell Reamers,

BIT STOCK DRILLS,

DRILLS FOR COES, WORCESTER, HUNTER AND OTHER HAND DRILL PRESSES. BEACH'S PATENT SELF-CENTERING CHUCKS, CENTER AND ADJUSTABLE DRILL CHUCKS, SOLID AND SHELL REAMERS. DRILL GRINDING MACHINES. TAPER REAMERS, MILLING CUTTERS AND SPECIAL TOOLS TO ORDER.

All Tools exact to Whitworth Standard Gauges.

GEO. R. STETSON, Supt. EDWARD S. TABER, Treas.

The New Pulsometer

CHEAP, ECONOMICAL, EFFICIENT.

CLARK'S ISLAND GRANITE WORKS, OF ROCKLAND, MAINE, Manufacturers of Building and Monumental Work.
OFFICES, 83 and 84 ASTOR HOUSE, NEW YORK, Feb. 26, 1881.

Pulsometer Steam Pump Co.—We most cordially recommend your New Pulsometer as being an economical steam pump, both in consumption of steam and for repairs. The No. 5 purchased in 1877 has since kept our Granite Quarry free from water.

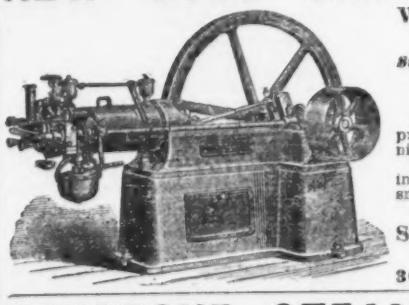
During the spring of 1879 we were completely drowned out, the sea breaking in and filling our quarry with water, the Pulsometer being nearly five feet under water; but much to our surprise, when steam was accidentally turned on at the boiler, she started off and worked for two days before we could see it, and gradually cleaned the entire reservoir. Wishing to be prepared should such a circumstance again happen, we ordered the No. 6, which is perfection, and works equally as well. We can guarantee your New Pulsometer only requires a trial to convince any person of the perfection now attained in the pump.

Yours truly, MARK & ST. JOHN.

For book giving many letters like the above, full description and prices of the New Pulsometer, address

PULSOMETER STEAM PUMP CO., 83 John st., N.Y.

NEW OTTO SILENT GAS ENGINE.



Working Without Boiler, Steam, Coal, Ashes or Attendance.

Started Instantly by a Match, it gives Full Power Immediately.

When Stopped, all Expense Ceases.

No explosions, no fires nor cinders, no gauges, no pumps, no engineer or other attendant while running. Recommended by insurance companies.

UNSURPASSED IN EVERY RESPECT for hoisting in warehouses, printing, ventilating, running small shops, &c.

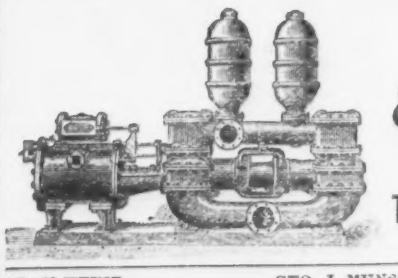
2, 4 and 7 H. P. and upwards. Built by

SCHLEICHER, SCHUMM & CO.,

Engineers and Machinists,

3045 Chestnut Street, Philadelphia.

KEYSTONE STEAM PUMP WORKS,



PUMPS

& Pumping Machinery

OF ALL KINDS.

THOMPSON, EPPING & CARPENTER

PITTSBURCH PA.

ADAM HEINZ. GEO. J. MUNSCHAUER. MICHAEL J. STARK.

NIAGARA STAMPING & TOOL CO.,

Manufacturers of

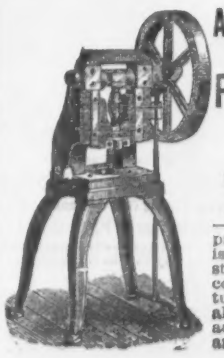
Presses, Dies and Tools

For Working Sheet Metal

Fruit Can and Tinners' Tools, &c.

Works, 147 and 149 Elm Street,

Near Clinton st., BUFFALO, N. Y.



A. H. MERRIMAN

Patent Power

Punching Presses,

West Meriden, Ct.

Judges' Report.—"He exhibits a power press, or punch, which is a well-made, substantial machine, and contains several features of marked originality, which materially augment its durability and efficiency."

PAT'D. JUNE 21 '70

H. WEINDEL,

405 N. Fourth St., Philad'phia,

Manufacturer of

FIRST CLASS FLY-WHEEL

AIR AND GAS PUMPS,

For Scientific and Technical purposes.

Several d. a. Pumps for the trade at bottom prices.

COOKE & CO.,

(Formerly COOKE & BEGGS.)

6 Cortlandt Street, New York,

GENERAL MACHINERY & SUPPLIES

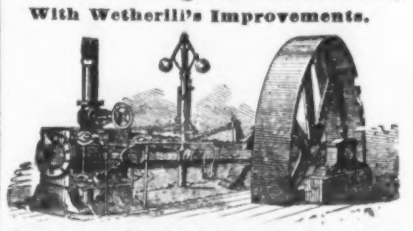
for Machinists, Mills, Mines and Manufacturers.

Drawings and specifications furnished and estimates made.

Machinery, &c.

Corliss Engine Builders,

With Wetherill's Improvements.



Engineers, Machinists, Iron Founders and Boiler Makers.

ROBT. WETHERILL & CO. Chester, Pa.

Established 1867.

Edwin Harrington & Son

MANUFACTURERS OF PATENT EXTENSION AND SCREW CUTTING

LATHES,

Iron Planers,

Radial, Upright, Suspension, Multiple and Lever

DRILLS,

and a variety of other MACHINISTS' TOOLS

Patent

Double Chain Screw Pulley Blocks,

unrivalled for *Durability, Safety* and *Power*.

Patent Double Chain Quick-Lift Hoists,

with Brake for quick and easy lowering.

Circulars furnished.

WORKS AND OFFICE, Cor. N. 15th and Penna. Ave., Philadelphia, Pa., U.S.A.

Represented by J. O. MAYNARD, 52 Liberty Street, N. Y., C. E. KIMBALL, 128 Oliver St., Boston.

BAILEY ELEVATOR

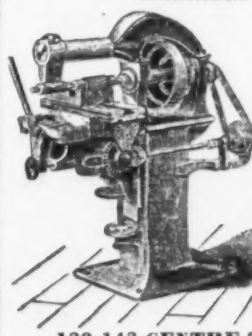
AND PORTABLE HOIST.

Warranted double the power and not one-half the price of other hoisters. As a proof of this above I will give them 30 days on trial. Send for catalogue and price list. Address,

J. DUNN, 32 Bank Street, CLEVELAND, OHIO.

E. E. CARVIN & CO.,

Manufacturers of



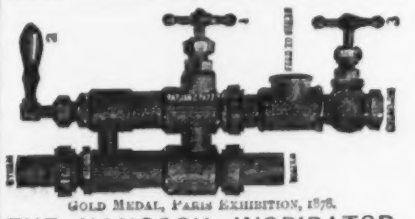
No. 4 Milling Machine.

Milling Machines, Drill Presses, Hand Lathes, Tapping Machines, Cutter Grinders and Wood Planers. Milling Cutters, all shapes and sizes. Gear Cutting and Milling in all its branches.

139-143 CENTRE STREET,

Cornell's Building, NEW YORK.

Send for Illustrated Catalogue.



GOLD MEDAL, PARIS EXHIBITION, 1878.

THE HANCOCK INSPIRATOR,

New Combined Pump and Injector.

Eclipses all other appliances hitherto introduced for feeding Steam Boilers. A Portable Boiler is not perfect without one. It lifts its water 25 feet with a low steam pressure, and puts it directly into the Boiler. No adjustment necessary for varying steam pressures.

G. W. STORER, General Agent, 149 N. 3d st., Phila.

EMPIRE FORGES

Improved, without Belts, Bellows, Crank Pins, Dead Centers or Back motion. Send for circular.

Empire Portable Forge Co.,

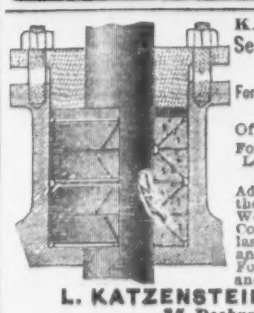
Cohoes, N. Y.

RIVAL STEAM PUMPS

THE CHEAPEST AND THE BEST FOR HOT & COLD WATER.

$35.00 AND UPWARDS.

15 SIZES MANUF'D BY JOHN H. McGOWAN & CO CINCINNATI



KATZENSTEIN'S Self-Acting Metal Packing,

For Piston Rods, Valve Stems, &c.,

Of every description,

For Steam Engines Locomotives, Pumps &c., &c.

Adopted and in use by the principal Iron Works and Steamship Companies within the last eight years in this and Foreign countries. For full particulars and references address

L. KATZENSTEIN & CO.,

38 Desbrosses St., N. Y.